



2008

3302.0

DEATHS

AUSTRALIA

EMBARGO: 11.30AM (CANBERRA TIME) WED 25 NOV 2009

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INQUIRIES

For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070 or Tracey Coomber on Canberra (02) 6252 5406.

NOTES

ABOUT THIS ISSUE

This publication brings together statistics on deaths and mortality in Australia. Data refer to deaths registered during the calendar year shown, unless otherwise stated. State or territory relates to state or territory of usual residence, unless otherwise stated.

Populations used in the calculation of death rates for 2006 and earlier years are the final estimated resident population by age and sex based on results of the *2006 Census of Population and Housing* (2006 Census) and earlier censuses. Death rates for 2007 use revised 30 June 2007 estimated resident population while rates for 2008 use preliminary 30 June 2008 estimated resident population.

CHANGES IN THIS ISSUE

Death rates for 2007 have been revised using revised 30 June 2007 estimated resident population.

Estimates of Indigenous and non-Indigenous life expectancy at birth for 2005–2007 are included in Chapter 3: Deaths of Aboriginal and Torres Strait Islander Australians.

TAKE CARE

As there is under-identification of deaths of Aboriginal and Torres Strait Islander (Indigenous) Australians in most states and territories, death rates for Indigenous Australians presented in this publication are likely to be underestimates of the true rates. Fluctuations in the level of Indigenous mortality over time partly reflect changing levels of identification of Indigenous deaths. Given the volatility in measures of Indigenous mortality, caution should be exercised in assessing trends in Indigenous mortality over time.

CAUSES OF DEATH AND PERINATAL DEATHS

Causes of death information is published under the 3303.0 product family. See *Causes of Death, Australia: Doctor Certified Deaths, Summary Tables* (cat. no. 3303.0.55.001) and *Causes of Death, Australia* (cat. no. 3303.0) for more information.

Perinatal death statistics are published in *Perinatal Deaths, Australia, 2007* (cat. no. 3304.0) and previously, in *Causes of Death, Australia* (cat. no. 3303.0).

STATE/TERRITORY LIFE TABLES

The release of state/territory life tables for 2006–2008 (cat. nos. 3302.1.55.001 to 3302.8.55.001) has been deferred until 11th December 2009. Life tables for Australia for 2006–2008 are published in *Life Tables, Australia, 2006–2008* (cat. no. 3302.0.55.001) and included in this issue (see Chapter 4: Life Tables).

ROUNDING AND CONFIDENTIALITY

Calculations as shown in the commentary sections of this publication are based on unrounded figures. Calculations using rounded figures may differ from those published. It is recommended that when using information presented in this publication, the relevant statistics be rounded. All data are affected by errors in reporting and processing. Death registrations data are also affected by delays in registration.

Where necessary, tables have had small values suppressed or randomised to protect confidentiality. As a result, sums of components may not add to totals.

Brian Pink
Australian Statistician

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LIFE TABLES, 2006–2008

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New South Wales (cat. no. 3302.1.55.001)

Victoria (cat. no. 3302.2.55.001)

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South Australia (cat. no. 3302.4.55.001)

Western Australia (cat. no. 3302.5.55.001)

Tasmania (cat. no. 3302.6.55.001)

Northern Territory (cat. no. 3302.7.55.001)

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ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
ASDR	age-specific death rate
ASGC	Australian Standard Geographical Classification
Aust.	Australia
cat. no.	Catalogue number
DRF	death registration form
ERP	estimated resident population
IMR	infant mortality rate
ISDR	indirect standardised death rate
LGA	local government area
MCCD	medical certificate of cause of death
no.	number
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
SA	South Australia
SACC	Standard Australian Classification of Countries
SAR	Special Administrative Region
SD	statistical division
SDR	standardised death rate
SLA	statistical local area
SSD	statistical subdivision
Tas.	Tasmania
UNSD	United Nations Statistics Division
Vic.	Victoria
WA	Western Australia

CHAPTER 1

MAIN FINDINGS

DEATH RATES STEADY

- There were 143,900 deaths registered in Australia in 2008, approximately 6,100 (4.4%) more than the number registered in 2007 (137,900).
- The standardised death rate (SDR) has remained at 6.0 deaths per 1,000 standard population in 2008, which was the same as in 2005, 2006 and 2007.
- Over the past 20 years, SDRs have decreased for all states and territories, although New South Wales, Queensland, the Northern Territory and the Australian Capital Territory experienced slightly higher SDRs in 2008 than in 2007.
- The highest standardised death rate in 2008 was in the Northern Territory (9.2 deaths per 1,000 standard population), while the lowest rates were in Victoria and the Australian Capital Territory (both 5.8).
- Over the past 20 years death rates have declined for both males and females for all ages. The largest proportional decreases in male age-specific death rates over this period occurred in the 10–14 years (down 62%) and 15–19 years age groups (down 58%). For females, the 5–9 years age group experienced the largest proportional decrease (down 56%), followed by females aged 15–19 years (down 52%).

LIFE EXPECTANCY AT BIRTH

- Over the past 20 years life expectancy at birth has improved by 6.1 years for males and 4.2 years for females. Based on current mortality rates, a boy born in 2006–2008 can expect to live 79.2 years while a girl can expect to live 83.7 years.
- According to United Nations estimates for 2005–10, Australia's life expectancy at birth is ranked among the highest in the world. Australia's male life expectancy at birth ranks fourth, below Iceland, Hong Kong (SAR of China), and Switzerland. Australia's female life expectancy at birth is ranked sixth, below Japan, Hong Kong (SAR of China), France, Switzerland and Spain.

INFANT DEATHS

- In 2008 there were 1,200 infant deaths (deaths of children less than one year of age) registered in Australia. This was a 1.9% increase over the number registered in 2007.
- The infant mortality rate in 2008 was 4.1 infant deaths per 1,000 live births, slightly lower than the rate in 2007.

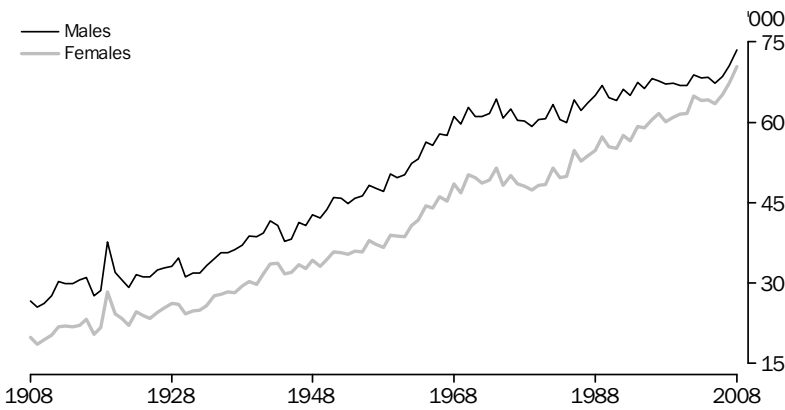
DEATHS OF ABORIGINAL AND TORRES STRAIT ISLANDER AUSTRALIANS

- There were 2,500 deaths registered in Australia in 2008 where the deceased person was identified as being of Aboriginal, Torres Strait Islander or both origins (Indigenous).

INTRODUCTION

In 2008 there were 143,900 deaths (73,500 males and 70,400 females) registered in Australia, an increase of 6,100 deaths (or 4.4%) compared with the number of deaths registered in 2007 (137,900). Since the early 1980s the number of deaths registered has increased by around 0.6% per year on average for males and 1.3% per year for females, with year to year fluctuations.

2.1 DEATHS REGISTERED, 1908–2008



Source: Australian Historical Population Statistics (3105.0.65.001); Deaths, Australia (3302.0).

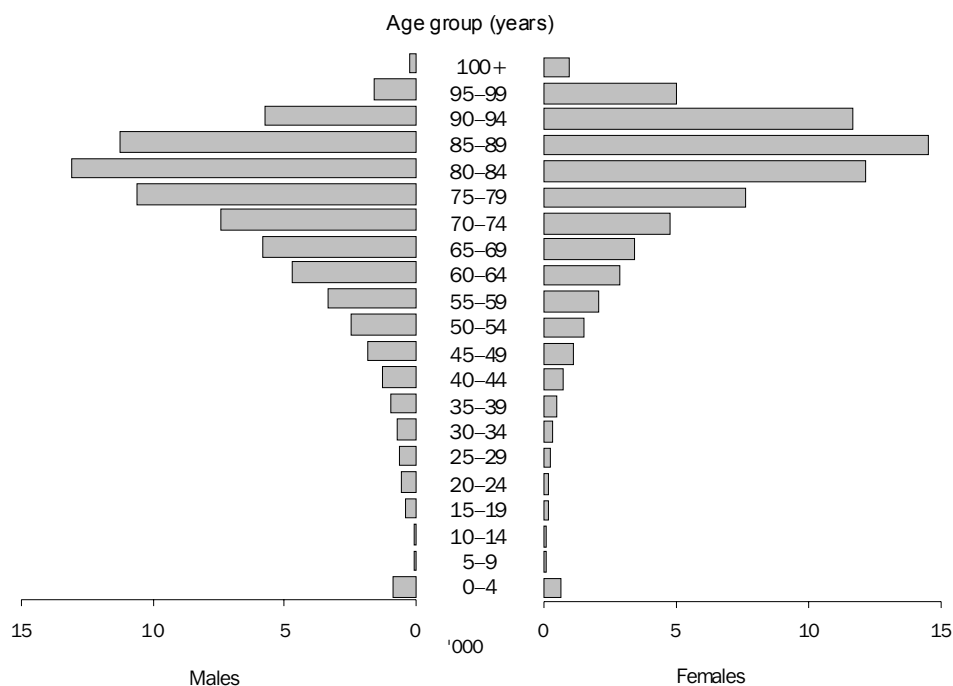
The steady increase in the number of deaths over time reflects the increasing size of the population and, in particular, the increasing number of older people. With the continued ageing of the population the number of deaths is projected to continue to increase throughout the remainder of the century (see graph 2.15).

Male and female deaths

There were more male deaths (73,500) registered in 2008 than female deaths (70,400), resulting in a sex ratio of 104.5 male deaths for every 100 female deaths. This ratio is decreasing over time, with 118.8 male deaths for every 100 female deaths in 1988.

Graph 2.2 shows the distribution of deaths registered in 2008 by age group and sex.

2.2 DEATHS, Australia, Age(a) and sex—2008



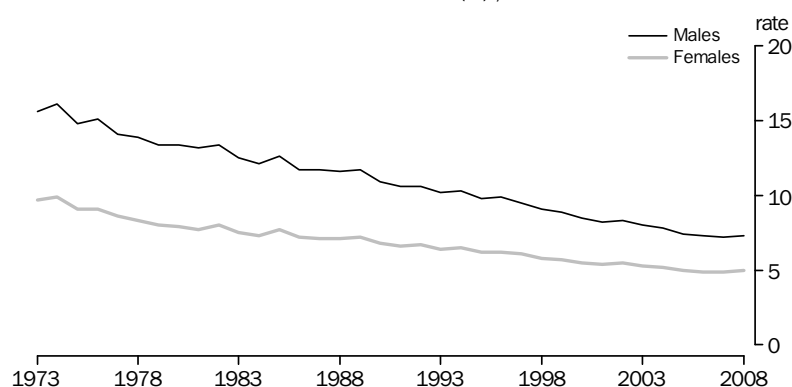
(a) Excludes deaths for which age of death was not stated.

DEATH RATES STEADY

Australia

Despite the ageing of the population over the last 20 years, death rates have declined overall. In 1988 the crude death rate was 7.3 deaths per 1,000 population, decreasing to a low of 6.4 deaths per 1,000 population in 2005. Since then, the crude death rate has risen slightly, to 6.7 deaths per 1,000 population in 2008. Given the ageing of Australia's population, the overall decline in the crude death rate indicates a considerable decline in age-specific death rates over the period.

Taking into account the effect of changes in the age structure of Australia's population over time, the standardised death rate (SDR) has shown consistent decreases over the past 20 years. In 1998 the SDR was 9.0 deaths per 1,000 standard population, decreasing to a low of 6.0 deaths per 1,000 standard population in 2005 (an overall decrease of 33%). Since then, the SDR has remained at 6.0 deaths per 1,000 standard population, indicating that the long-term trend in declining mortality rates in Australia has slowed. Mortality data for subsequent years will indicate whether this trend has halted. Standardised death rates are calculated using the 2001 total population of Australia as the standard population (see Glossary for more information).

*Australia continued***2.3** STANDARDISED DEATH RATES(a), Australia

(a) Deaths per 1,000 standard population. Standardised death rates are calculated using the 2001 total population of Australia as the standard population.

While male mortality rates remain higher than female mortality rates, in the last 20 years the difference has narrowed. In 1988, males had an SDR of 11.6 deaths per 1,000 standard population, 4.5 deaths higher than the female SDR of 7.1 deaths per 1,000 standard population. By 2008, the male SDR had decreased to 7.3 deaths per 1,000 standard population, 2.3 deaths higher than the female rate of 5.0 deaths per 1,000 standard population.

States and territories

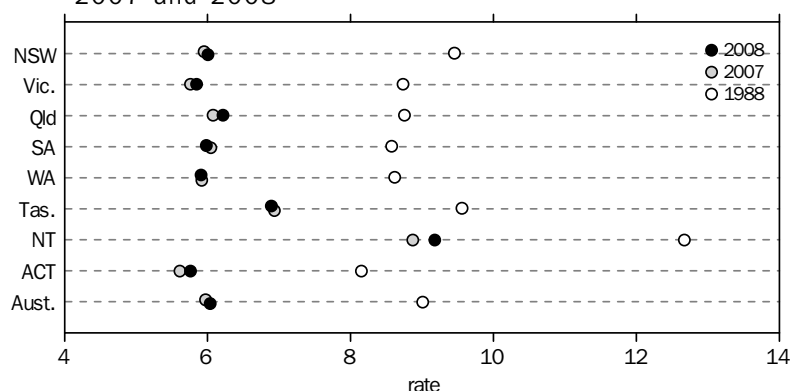
Over the past 20 years all states and territories have experienced overall declines in SDRs, with the Northern Territory experiencing the largest absolute decline (from 12.7 deaths per 1,000 standard population in 1988 to 9.2 in 2008) and the Australian Capital Territory experiencing the smallest absolute decline (from 8.2 to 5.8 over the same period).

However, similar to the SDR for Australia overall, in recent years the declining trend in state/territory SDRs appears to have slowed, with small increases in SDRs being recorded in New South Wales, Queensland, the Northern Territory and the Australian Capital Territory in 2008.

The Northern Territory's SDR of 9.2 deaths per 1,000 standard population remained much higher than the other states and territories, while Tasmania recorded the second highest SDR (6.9). The lowest SDRs were recorded in Victoria and the Australian Capital Territory, both with 5.8 deaths per 1,000 standard population.

States and territories

continued

2.4 STANDARDISED DEATH RATES, States and territories—1988, 2007 and 2008

(a) Deaths per 1,000 standard population. Standardised death rates are calculated using the 2001 total population of Australia as the standard population.

In 2008, the Northern Territory recorded the highest SDRs for both males and females, of 10.6 and 7.7 deaths per 1,000 standard population respectively. The lowest SDR for males was recorded in the Australian Capital Territory (6.8), while Western Australia recorded the lowest SDR for females (4.8).

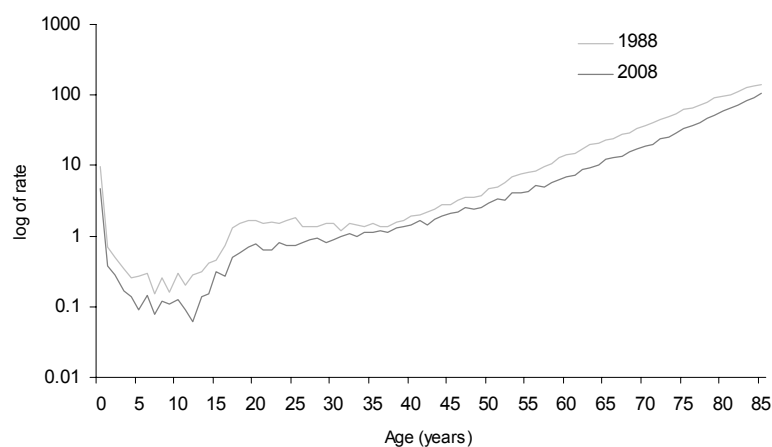
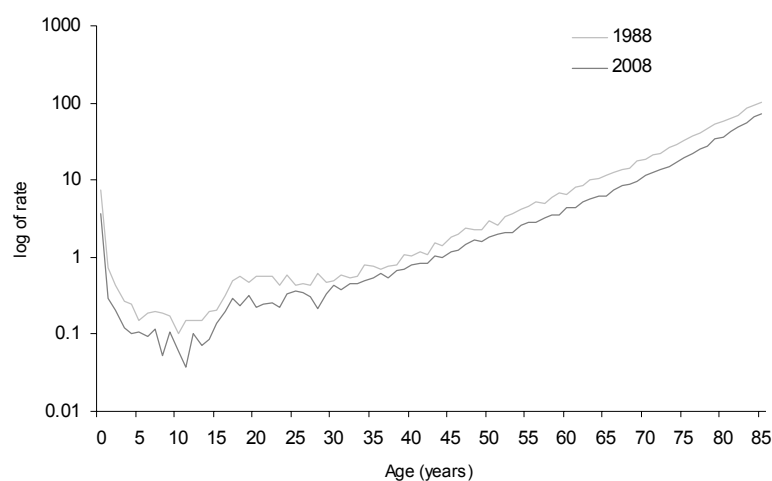
Male SDRs were higher than female SDRs in all states and territories in 2008. The difference was greatest in the Northern Territory where the male SDR (10.6 deaths per 1,000 standard population) was 2.8 deaths higher than the female SDR (7.7 deaths per 1,000 standard population). The Australian Capital Territory recorded the smallest difference, with the male SDR (6.8) being 1.8 deaths higher than the female SDR (5.0).

AGE-SPECIFIC DEATH RATES

From relatively high rates of death in infancy, death rates decline sharply through childhood. In 2008 the lowest age-specific death rates (ASDRs) in Australia were experienced by males and females aged 5–9 years and 10–14 years. ASDRs begin to increase from around 15 years of age, for both males and females. For all age groups to 85 years and over, ASDRs are higher for males than females.

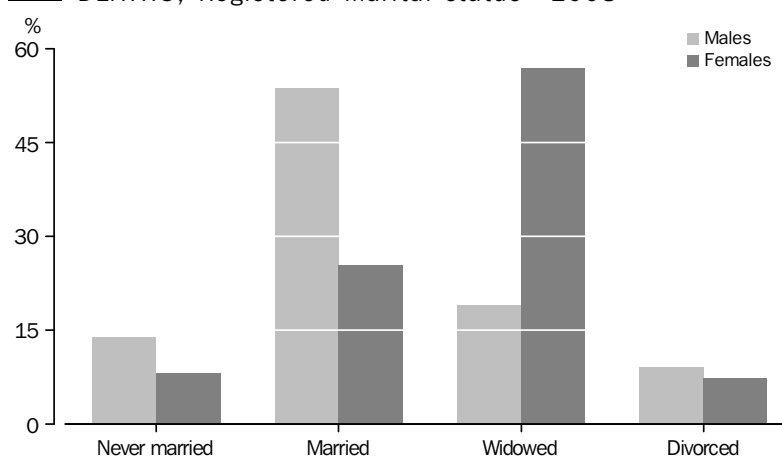
For 2008, males aged 15–19 years had an ASDR of 0.5 deaths per 1,000 male population, while females of the same age experienced 0.2 deaths per 1,000 female population. Male ASDRs increase gradually until around age 40–44 years, where they begin to increase more quickly throughout the older age groups (graph 2.5). Age-specific death rates for females aged 15–29 years are relatively low and constant. Steady increases in female ASDRs are evident beyond 35–39 years of age and continue throughout the older age groups (graph 2.6).

Over the past 20 years death rates have declined overall for both males and females for all ages. The largest proportional decreases in male ASDRs have occurred in the 10–14 year age group (down 62%), followed by males aged 15–19 years (down 58%) and 20–24 years (down 54%). For females, the 1–4 years age group has experienced the largest proportional decrease (down 56%), followed by females aged 10–14 years (down 52%) and 20–24 years (down 51%).

2.5 AGE-SPECIFIC DEATH RATES (a), Males—1988 and 2008**2.6** AGE-SPECIFIC DEATH RATES (a), Females—1988 and 2008**MARITAL STATUS**

Of all men whose deaths were registered during 2008 for whom marital status was known, 54% were in a registered marriage at the time of death, 19% were widowed and 14% were never married. In contrast, of all women whose deaths were registered during 2008 for whom marital status was known, 26% were in a registered marriage, 57% were widowed and 8% were never married. These differences are a consequence of the greater longevity of women.

MARITAL STATUS

*continued***2.7** DEATHS, Registered marital status—2008

The fact that married people have lower mortality than unmarried people has been observed in many studies over time and in different countries (Lillard & Panis 1996). The reasons for this have been debated for over 100 years (Farr 1858). Two main explanations have been put forward. The first suggests that marriage improves a person's health status, thus reducing the risk of an earlier death. Married people are less likely to participate in risky behaviour and more likely to nurture each other's health through promoting good diet and physical care. The second states that differentials are due to the selection of healthier individuals into marriage. Particularly in a country like Australia, where registered marriage is far from universal, selectivity is likely to be an important factor.

COUNTRY OF BIRTH

Australia's overseas-born population accounted for 30% of deaths registered in 2008 (43,100 deaths), despite making up only 26% of the resident population in 2008. This is due to the older age structure of the overseas-born population (with a median age of 45.7 years in 2008) compared with the Australian-born population (with a median age of 33.2 years).

However, when the older age structure of the overseas-born population is taken into account, migrants generally have lower death rates than the Australian-born population. This is true for nearly all migrant groups.

Indirect standardised death rates (ISDRs) allow comparisons of mortality between populations with different age and sex structures. In 2008, men born overseas had an ISDR of 6.6 deaths per 1,000 standard population, 12% lower than the rate for men born in Australia (7.6). Women born overseas had an ISDR of 4.7 deaths per 1,000 standard population, 13% lower than the rate for women born in Australia (5.4).

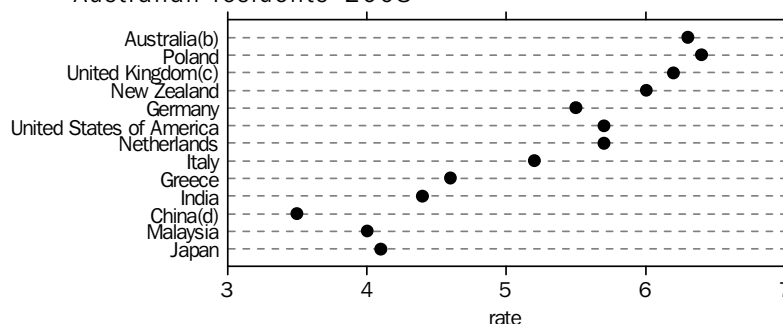
For individual birthplaces, ISDRs differ markedly. Rates for Australians born in New Zealand (6.0), the United States of America (5.7) and Western European countries such as Germany (5.5) and the Netherlands (5.7) were similar to that of Australian-born persons (6.3) in 2008, while rates for Southern European birthplaces (Italy and Greece) were lower (5.2 and 4.6 respectively). Australian residents born in South-East and North-East Asian countries recorded the lowest ISDRs in 2008: people born in Japan recorded 4.1 deaths per 1,000 standard population, while people born in Malaysia

COUNTRY OF BIRTH

continued

recorded 4.0. People born in China recorded the lowest ISDR of the selected birthplaces in 2008, with 3.5 deaths per 1,000 standard population (44% lower than the rate for the Australian-born population).

2.8 INDIRECT STANDARDISED DEATH RATES (a), Country of birth of Australian residents—2008



(a) Deaths per 1,000 standard population. Standardised death rates are calculated using the 2001 total population of Australia as the standard population.

(b) Includes External Territories.

(c) United Kingdom, Channel Islands and Isle of Man.

(d) Excludes SARs and Taiwan Province.

Of the 43,100 deaths of Australians born overseas for whom duration of residence in Australia was known, 65% had resided in Australia for 40 years or more. A further 15% had resided in Australia for 30–39 years, and 10% for 20–29 years. The remaining 11% of deaths of the overseas-born population were of persons who had resided in Australia for less than 20 years. In 2008 the median duration of residence for deaths registered in Australia of overseas-born persons was 46.9 years.

INFANT DEATHS

In 2008 there were 1,200 infant deaths (deaths of children less than one year of age) registered in Australia. This was a 1.9% increase over the number registered in 2007.

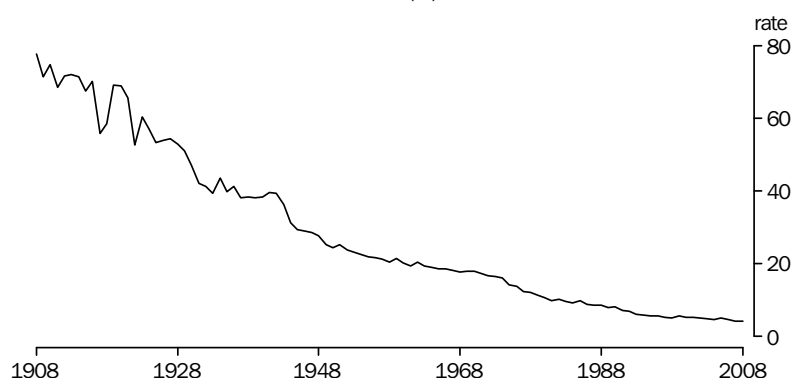
Infant mortality rates

The infant mortality rate (IMR) of 4.1 infant deaths per 1,000 live births in 2008 was 2% lower than the rate in 2007 (4.2) and 52% lower than in 1988 (8.7).

Over the past 100 years, Australia's infant mortality has declined significantly. For the period 1901–1910, around one in 12 infants did not survive to their first birthday (an IMR of 81.8 infant deaths per 1,000 live births in 1905). By 2008, one in 240 infants did not survive their first year of life. Declines in infant mortality in the early part of the 20th century have been attributed to improvements in public sanitation and health education, while later declines may be a consequence of the introduction of universal health insurance (Medicare) and improvements in medical technology, such as neonatal intensive care units (Taylor et al. 1998).

Infant mortality rates
continued

2.9 INFANT MORTALITY RATES (a)—1908–2008



(a) Infant deaths per 1,000 live births.

Source: Australian Historical Population Statistics (3105.0.65.001); Deaths, Australia (3302.0)

States and territories

South Australia recorded the lowest IMR in 2008 (2.9 infant deaths per 1,000 live births), followed by Western Australia (3.4) and Victoria (3.7). The Northern Territory's IMR of 6.1 was the highest of the states and territories, followed by the Australian Capital Territory with an IMR of 5.0. Some states and territories have experienced volatility in IMRs from year to year due in part to the decline in the number of infant deaths, resulting in rates based on small numbers.

Infant age at death

In 2008, 39% of all infant deaths occurred within the first day of life, with a further 31% occurring in the remainder of the first four weeks of life.

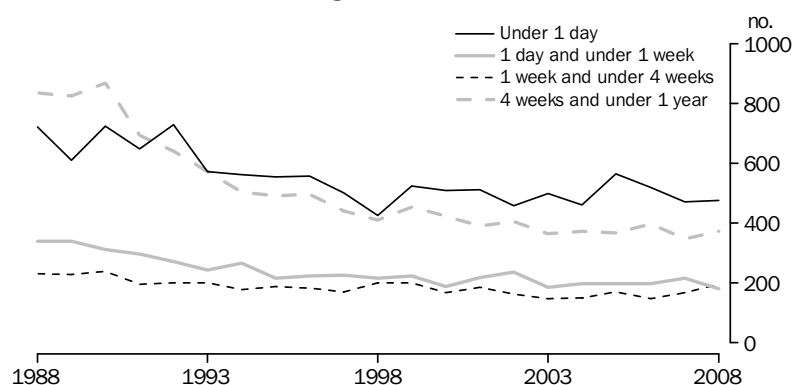
Until around 1998, numbers of infant deaths at all ages were decreasing. Between 1988 and 1998, the total number of infant deaths decreased by 5.2% per year on average. Since then, total numbers of infant deaths each year have remained relatively stable in number, fluctuating between 1,400 and 1,200 deaths per year.

Between 1988 and 1998, deaths of infants aged under one week decreased by 4.9% per year on average. Since then, the number of deaths have remained largely unchanged, varying between 660 and 760 deaths per year.

Between 1988 and 1998, deaths of infants aged one week and over decreased by 5.4% per year on average, and have continued to decrease, although at a slower rate (1.6% per year) than previously.

Infant age at death
continued

2.10 INFANT DEATHS, Age at death—1988–2008



(a) For some infant deaths, only limited information on age at death is known. See paragraph 29 of the Explanatory Notes for more information.

Male and female infant deaths

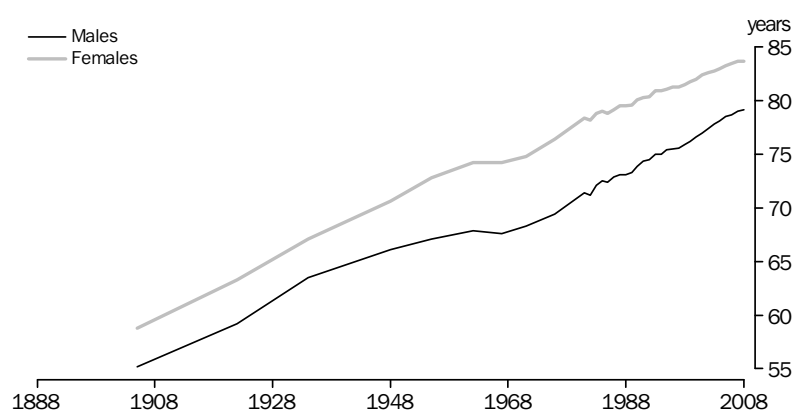
Over the past twenty years, male infant deaths have consistently outnumbered female infant deaths. In 2008 there were 700 male deaths, 34% more than the number of female deaths (520). As a result the male IMR has been consistently higher than the female IMR over this period.

LIFE EXPECTANCY AT BIRTH

In 2006–2008 life expectancy at birth for Australia was 79.2 years for males, an increase of 0.2 years over 2005–2007, and 83.7 years for females, the same as in 2005–2007.

Over the past century, male life expectancy at birth has increased by 24 years, from 55.2 years in 1901–1910 to 79.2 years in 2006–2008. Similarly, female life expectancy at birth has increased by 25 years, from 58.8 years to 83.7 years. The increase in life expectancy at birth reflects declining death rates at all ages.

2.11 LIFE EXPECTANCY AT BIRTH—1907–2008



Source: Australian Historical Population Statistics (3105.0.65.001); Deaths, Australia (3302.0)

State/territory life expectancy at birth

Release of state/territory life tables for 2006–2008 (cat. nos. 3302.1.55.001 to 3302.8.55.001) has been deferred until 11th December 2009.

INTERNATIONAL
COMPARISON

Life expectancy

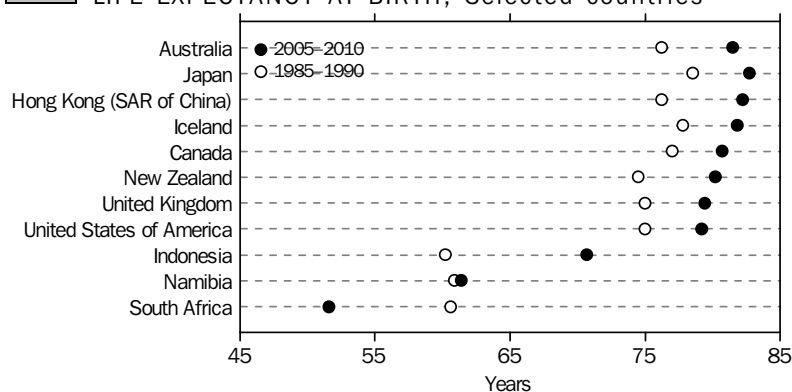
Australians have a life expectancy at birth which compares well with that experienced in other developed nations. According to the United Nations in *World Population Prospects: The 2008 Revision* (2009), global life expectancy at birth for 2005–2010 (medium variant) is estimated to be 65.4 years for males and 69.8 years for females. ABS life tables for 2006–2008 indicate that life expectancy at birth for Australian males (79.2 years) and females (83.7 years) continue to be among the highest in the world.

Life expectancy at birth varies widely between regions of the world. According to United Nations estimates for 2005–2010, Northern America has the highest combined life expectancy at birth at 79.3 years followed by Oceania (76.4 years) and Europe (75.1 years). Africa (54.1 years) has the lowest combined life expectancy at birth followed by Asia (68.9 years), then Latin America and the Caribbean (73.4 years).

Also according to United Nations estimates for 2005–2010, life expectancy at birth of Australian males (79.1 years) is exceeded only by Iceland, Hong Kong (SAR of China) and Switzerland. Life expectancy at birth of Australian females (83.8) is exceeded by Japan, Hong Kong (SAR of China), France, Switzerland, and Spain.

Combined Australian male and female life expectancy at birth for 2005–2010 was 81.5 years. This was higher than the level for Canada (80.7 years), New Zealand (80.2 years), the United Kingdom (79.4 years) and the United States of America (79.2 years).

2.12 LIFE EXPECTANCY AT BIRTH, Selected countries



Source: United Nations Population Division, 'World Population Prospects: The 2008 Revision', last viewed November 2009, <<http://www.un.org>>.

Infant mortality rate

The United Nations in *World Population Prospects: The 2008 Revision* (2009) estimates the global infant mortality rate for 2005–2010 to be 47.3 infant deaths per 1,000 live births. The United Nations estimate of Australia's IMR (4.5 infant deaths per 1,000 live births) is among the lowest in the world, lower than that of New Zealand (4.6), Canada and the United Kingdom (both 4.8), and the United States of America (5.9). Iceland (2.9) has the lowest IMR, followed by Singapore (3.0) and Sweden (3.1).

On a regional basis, Northern America has the lowest IMR, with 5.8 infant deaths per 1,000 live births, followed by Europe (7.2). The world's regions recording the highest IMRs are Africa (82.6), followed by Asia (41.5), Oceania (22.8), which includes Australia, and then Latin America and the Caribbean (21.8).

YEAR OF OCCURRENCE

The majority of this publication contains deaths data based on year of registration. Although most deaths are registered in the year in which they occur, some deaths are not registered until the following year or later.

Deaths data presented by year of occurrence in this publication are therefore considered preliminary and are subject to change as deaths that occurred up to 31 December 2008 but have not yet been registered by this date are registered in subsequent years.

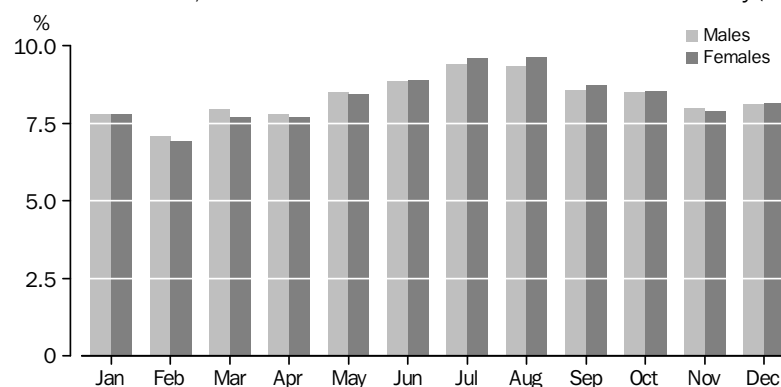
Deaths registered in the same year as they occurred

The likelihood of a death being registered in a year following its occurrence is substantially greater for deaths which occur near the end of the calendar year. Of the 143,900 deaths registered in 2008, 93.9% (135,200 deaths) occurred in 2008 and the remainder (6.1%, or 8,800 deaths) occurred in 2007 or earlier years (the majority of which occurred in December 2007). See paragraphs 27 and 28 of the Explanatory Notes.

Monthly occurrence of deaths

Deaths tend to occur more often in some months than others. Over the period 2005–2007, an average of 135,100 deaths occurred each year in Australia. The largest numbers of deaths on average occurred in the winter months of August (6,500 male deaths and 6,300 female deaths) and July (6,500 male deaths and 6,300 female deaths). In comparison, the smallest numbers of deaths on average (4,900 male deaths and 4,600 female deaths) occurred in the summer month of February (noting that February is the shortest month).

2.13 DEATHS, Month of death—2005–2007: Preliminary(a)



(a) Data for 2005–2007 are presented, as data for 2008 are incomplete due to delays between the occurrence and registration of deaths.

Deaths as a component of population change

Deaths comprise an important component of population change. In 2008, there were 143,900 deaths in Australia. This is roughly half the number the number of births (296,600), resulting in natural increase of 152,700 people. As the population of Australia ages, the number of deaths each year will increase, and the difference between numbers of births and deaths will decrease. Based on Series B of the most recent ABS population projections (*Population Projections, Australia, 2006 to 2101*, cat. no. 3222.0), the number of births is projected to remain higher than the number of deaths until 2101.

Deaths as a component of
population change
continued

2.14 COMPONENTS OF POPULATION CHANGE (a)

	Births(b)	Deaths(b)	Natural increase	Net overseas migration	Population at end of period	Population increase(c)	
	'000	'000	'000	'000	'000	'000	%
2004	248.6	132.4	116.2	106.4	20 252.1	240.3	1.2
2005	263.4	131.4	132.0	137.0	20 544.1	291.9	1.4
2006	r268.5	r134.5	r134.0	r182.2	r20 873.7	r329.6	r1.6
2007	r287.0	r138.9	r148.1	r216.2	r21 237.9	r364.2	r1.7
2008	p296.6	p143.9	p152.7	p253.4	p21 644.0	p406.1	p1.9

p preliminary figure or series subject to revision

r revised

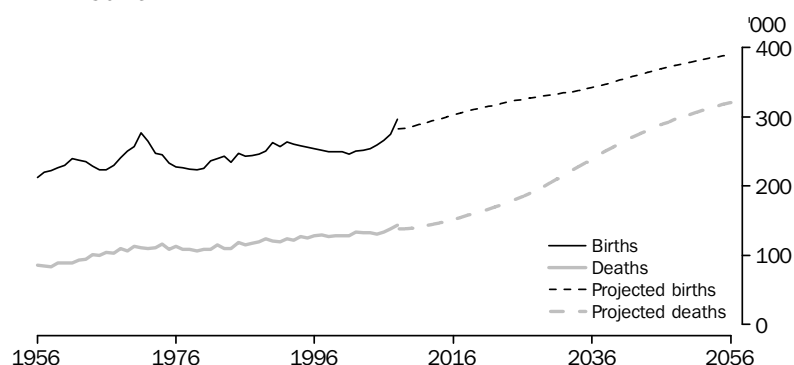
(a) Calendar year.

(b) For 2006 and earlier years, births and deaths in this table are based on year of occurrence, for population estimation purposes. For 2007, a combination of data based on quarter of occurrence (for the March and June quarters) and quarter of registration (for the September and December quarters) is used. Data for 2008 are based on year of registration. Numbers of deaths in this table will therefore differ from data elsewhere in this publication.

(c) Population increase will not necessarily equal the sum of natural increase and net overseas migration due to intercensal discrepancy. See Glossary for more information.

Source: Australian Demographic Statistics (cat. no. 3101.0)

2.15 ACTUAL AND PROJECTED BIRTHS AND DEATHS, Year ended 30 June



Source: Australian Historical Population Statistics, 2008 (cat. no. 3105.0.65.001)
Australian Demographic Statistics, March Quarter 2009 (cat. no. 3101.0)
Population Projections, Australia, 2006 to 2101 (cat. no. 3222.0) (Series B)

2.16 DEATHS, Australia—Selected years

		1988	1993	1998	2003	2004	2005	2006	2007	2008
DEATHS										
Total deaths	no.	119 866	121 599	127 202	132 292	132 508	130 714	133 739	137 854	143 946
Males	no.	65 082	65 089	67 073	68 330	68 395	67 241	68 556	70 569	73 548
Females	no.	54 784	56 510	60 129	63 962	64 113	63 473	65 183	67 285	70 398
Sex ratio	ratio	118.8	115.2	111.5	106.8	106.7	105.9	105.2	104.9	104.5
Standardised death rates(a)										
Males	rate	11.6	10.2	9.1	8.0	7.8	7.4	7.3	7.2	7.3
Females	rate	7.1	6.4	5.8	5.3	5.2	5.0	4.9	4.9	5.0
Persons	rate	9.0	8.0	7.2	6.5	6.3	6.0	6.0	6.0	6.0
Crude death rates(b)										
Males	rate	7.9	7.4	7.2	6.9	6.8	6.6	6.7	6.7	6.9
Females	rate	6.6	6.4	6.4	6.4	6.3	6.2	6.3	6.3	6.5
Persons	rate	7.3	6.9	6.8	6.6	6.6	6.4	6.5	6.5	6.7
Median age at death										
Males	years	71.6	72.9	74.5	76.2	76.6	76.8	77.3	77.5	77.9
Females	years	78.2	79.5	81.0	82.4	82.6	82.9	83.3	83.5	83.9
Persons	years	74.6	76.1	77.4	79.3	79.5	79.8	80.3	80.5	80.9
Life expectancy at exact age(c)										
Males										
0	years	73.1	75.0	75.9	77.8	78.1	78.5	78.7	79.0	79.2
1	years	72.8	74.5	75.3	77.2	77.5	77.9	78.1	78.4	78.6
25	years	49.8	51.3	52.1	53.8	54.1	54.5	54.7	55.0	55.1
45	years	31.2	32.5	33.4	35.0	35.2	35.6	35.7	36.0	36.1
65	years	14.8	15.7	16.3	17.6	17.8	18.1	18.3	18.5	18.6
85	years	5.0	5.1	5.4	5.6	5.7	5.9	5.9	6.0	5.9
Females										
0	years	79.5	80.9	81.5	82.8	83.0	83.3	83.5	83.7	83.7
1	years	79.1	80.3	80.9	82.2	82.4	82.7	82.9	83.1	83.1
25	years	55.7	56.7	57.3	58.5	58.7	59.0	59.2	59.4	59.4
45	years	36.4	37.4	38.0	39.1	39.3	39.6	39.7	39.9	39.9
65	years	18.8	19.5	20.0	21.0	21.1	21.4	21.5	21.6	21.6
85	years	6.2	6.3	6.5	6.9	6.9	7.1	7.1	7.1	7.0
INFANT DEATHS										
Total infant deaths	no.	2 132	1 591	1 252	1 199	1 184	1 302	1 262	1 203	1 226
Males	no.	1 227	918	706	677	678	714	727	655	702
Females	no.	905	673	546	522	506	588	535	548	524
Infant mortality rates(d)										
Males	rate	9.7	6.9	5.5	5.2	5.2	5.4	5.3	4.5	4.6
Females	rate	7.5	5.3	4.5	4.3	4.1	4.7	4.1	3.9	3.6
Persons	rate	8.7	6.1	5.0	4.8	4.7	5.0	4.7	4.2	4.1

(a) Deaths per 1,000 standard population. Standardised death rates use total persons in the 2001 Australian population as the standard population.

(b) Deaths per 1,000 population.

(c) Prior to 1995 life expectancy was based on annual life tables calculated by the Australian Bureau of Statistics. For 1995 onwards, life expectancy has been calculated using data for the three years ending in the year in the table heading.

(d) Infant deaths per 1,000 live births.

2.17 DEATHS, States and territories—2008

		NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.(a)
DEATHS										
Total deaths	no.	48 782	35 497	27 335	12 616	12 752	4 219	1 041	1 697	143 946
Males	no.	24 765	17 798	14 462	6 255	6 692	2 103	624	847	73 548
Females	no.	24 017	17 699	12 873	6 361	6 060	2 116	417	850	70 398
Sex ratio	ratio	103.1	100.6	112.3	98.3	110.4	99.4	149.6	99.6	104.5
Standardised death rates(b)										
Males	rate	7.3	7.0	7.5	7.2	7.1	8.2	10.6	6.8	7.3
Females	rate	5.0	4.9	5.1	5.0	4.8	5.8	7.7	5.0	5.0
Persons	rate	6.0	5.8	6.2	6.0	5.9	6.9	9.2	5.8	6.0
Crude death rates(c)										
Males	rate	7.2	6.8	6.7	7.9	6.1	8.6	5.5	4.9	6.9
Females	rate	6.8	6.6	6.0	7.8	5.7	8.4	3.9	4.9	6.5
Persons	rate	7.0	6.7	6.4	7.9	5.9	8.5	4.7	4.9	6.7
Median age at death										
Male	years	78.3	78.5	77.0	79.0	76.3	78.1	61.5	78.1	77.9
Female	years	84.0	84.2	83.4	84.5	83.7	83.3	61.5	83.0	83.9
Persons	years	81.1	81.4	80.1	81.9	79.9	80.9	61.5	80.3	80.9
INFANT DEATHS										
Total infant deaths	no.	412	264	308	59	108	26	24	24	1 226
Males	no.	241	151	174	31	58	15	16	16	702
Females	no.	171	113	134	28	50	11	8	8	524
Infant mortality rate(d)										
Males	rate	5.0	4.1	5.3	3.0	3.6	4.3	8.0	6.5	4.6
Females	rate	3.7	3.3	4.4	2.8	3.2	3.3	4.1	3.4	3.6
Persons	rate	4.4	3.7	4.9	2.9	3.4	3.8	6.1	5.0	4.1

(a) Includes Other Territories.

(c) Deaths per 1,000 population.

(b) Deaths per 1,000 standard population. Standardised death rates use total persons in the 2001 Australian population as the standard population.

(d) Infant deaths per 1,000 live births.

CHAPTER 3

DEATHS OF ABORIGINAL AND TORRES STRAIT ISLANDER AUSTRALIANS

INTRODUCTION

There were 2,500 deaths registered in Australia in 2008 where the deceased person was identified as being of Aboriginal, Torres Strait Islander or both origins (Indigenous).

A variety of measures of mortality (age-specific death rates, median age at death, infant mortality rates and life expectancy at birth) indicate that the mortality level of Indigenous Australians is substantially higher than that of the total Australian population.

The exact scale of difference between Indigenous and total population mortality is difficult to establish conclusively, due to quality issues with Indigenous deaths data and the uncertainties inherent with estimating and projecting the size and structure of the Indigenous population over time. Caution should be exercised when undertaking analysis of Indigenous deaths and mortality and, in particular, trends in Indigenous mortality.

Some of the issues affecting the reporting of Indigenous mortality include under identification of Indigenous deaths, unexplained changes in the number of people identified as Indigenous in different data collections and over time, the use of a standard Indigenous status question, and not stated Indigenous status.

REGISTERED INDIGENOUS DEATHS

Identification of Indigenous deaths

It is considered likely that most deaths of Indigenous Australians are registered. However, some of these deaths are not identified as Indigenous when they are registered. This may arise from the failure to report a person's Indigenous status on the death registration form or from an incorrect identification of their Indigenous status (that is, recording non-Indigenous instead of Indigenous) on the death certificate. Such mis-identification may occur because some Indigenous people may have non-Indigenous ancestries which may create uncertainty for those completing the death registration form as to how a deceased person should be identified.

As part of the 2006 Census Data Enhancement (CDE) project, the Indigenous Mortality Quality Study was conducted to estimate the extent of under-identification of Indigenous deaths in death registrations. The study involved linking death registrations (for 9 August 2006 to 30 June 2007) to 2006 Census of Population and Housing records, and comparing Indigenous status as recorded in the two collections. Identification rates obtained from the study were then used in the construction of experimental life tables of the Indigenous population of Australia for 2005–2007. Identification rates are presented in table 3.1.

Due to the small number of Indigenous deaths in Victoria, South Australia, Tasmania, Australian Capital Territory and Other Territories, under-identification rates are not available individually for these jurisdictions, but are presented as combined.

*Identification of
Indigenous deaths
continued*

There is considerable variation in identification rates at the state/territory level. Identification rates are less than 1.0 for New South Wales, Queensland and the Vic./SA/Tas./ACT grouping, which indicates under-identification of Indigenous deaths in death registrations. The situation is the opposite for Western Australia and the Northern Territory, indicating an over-representation of Indigenous deaths in death registrations relative to the Census; that is, persons who were identified as Indigenous in the death registrations collection exceeded those identified as Indigenous in the Census.

For more information see Chapter 3: Data Linkage to Derive Indigenous Deaths Identification Rates of *Experimental Life Tables for Aboriginal and Torres Strait Islander Australians, 2005–2007* (cat. no. 3302.0.55.003).

3.1 INDIGENOUS DEATHS IDENTIFICATION RATES, State/territory and Australia—2006–2007

<i>State/territory</i>	<i>Identification rate</i>
	no.
NSW	0.87
Qld	0.94
WA	1.11
NT	1.09
Vic./SA/Tas./ACT/OT combined	0.65
Aust.(a)	0.92

(a) Includes all states and territories.

The ABS continues to work with state and territory Registrars of Births, Deaths and Marriages and other stakeholders to improve the level of identification of Indigenous deaths in each jurisdiction. The larger numbers of Indigenous deaths recorded in Australia in recent years than those recorded in earlier years are partly due to substantial improvements in the completeness of the data.

Table 3.2 shows that improvements for Australia overall in the late 1990s were largely driven by improvements for Queensland and New South Wales. Queensland began to register deaths as Indigenous in 1996. In New South Wales the number of registered Indigenous deaths increased in 1998 to much higher levels than previous years. The numbers of Indigenous deaths registered in South Australia and the Northern Territory have remained relatively constant since 1997, suggesting that identification of deaths of Indigenous persons has been relatively stable in these jurisdictions.

An examination of the effect of data quality issues on the interpretation of trends in these data can be found in *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples, 2008* (cat. no. 4704.0).

*Indigenous status on
Medical Certificate of
Cause of Death*

From 2007 onwards, Indigenous status for deaths registered in South Australia, Western Australia, Tasmania, the Northern Territory and the Australian Capital Territory is sourced from both the Death Registration Form (DRF) and the Medical Certificate of Cause of Death (MCCD). Prior to 2007, Indigenous status was sourced from the DRF only. As a result of this change, there were an additional 44 deaths recorded as Indigenous in 2008, representing a 0.7% increase in the number of deaths recorded as Indigenous for Australia overall. In addition, a further 1,652 records were reclassified from 'not stated' Indigenous status to 'non-Indigenous'.

3.2 INDIGENOUS DEATHS, State/territory of usual residence(a)—1992–2008

	NSW	Vic.	Qld(b)	SA	WA	Tas.	NT	ACT	Aust. (c)
1992	165	53	np	107	346	np	397	—	1 074
1993	194	50	np	111	386	np	376	9	1 134
1994	207	50	np	123	377	np	380	10	1 153
1995	224	50	np	121	384	np	387	9	1 182
1996	177	49	258	118	370	np	328	np	1 306
1997	88	93	531	132	351	5	458	4	1 662
1998	462	123	593	127	378	13	415	3	2 114
1999	435	130	529	116	350	11	399	6	1 976
2000	473	108	535	144	407	np	450	np	2 127
2001	481	93	565	125	345	np	429	np	2 072
2002	516	64	590	107	371	20	462	4	2 136
2003	485	82	569	137	338	23	435	9	2 079
2004	490	54	579	131	400	20	449	10	2 136
2005	507	71	519	142	406	28	454	11	2 141
2006	530	111	584	124	443	20	452	14	2 279
2007(d)	601	95	594	138	502	24	461	6	2 421
2008	559	97	562	141	605	24	467	16	2 472

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Due to differing levels of identification for the states and territories and over time, care should be taken in interpreting change in numbers of deaths. As a result, data for Australia should not be analysed as a time series.

(b) Queensland began to register Indigenous deaths as Indigenous in 1996.

(c) Includes Other Territories.

(d) From 2007 onwards, Indigenous status for deaths registered in South Australia, Western Australia, Tasmania, Northern Territory and Australian Capital Territory is sourced from both the Death Registration Form and Medical Certificate of Cause of Death.

*The standard Indigenous
question*

All states and territories ask for the identification of Indigenous status of the deceased on the death certificate, which must be lodged with the state and territory Registrars of Births, Deaths and Marriages. However, some jurisdictions have had a longer history of recording the Indigenous status of deaths than others. It has only been since the mid to late 1990s that a uniform system of identifying all Indigenous deaths in Australia has been established. The current question asks:

"Was the deceased of Aboriginal or Torres Strait Islander origin?"

(If of both Aboriginal and Torres Strait Islander origin, tick both 'yes' boxes.)

- No
- Yes, Aboriginal origin
- Yes, Torres Strait Islander origin.

Not stated responses

In addition to those deaths identified as Indigenous, a number of deaths occur each year for which Indigenous status is not stated on the death registration form (table 3.3). In 2008 there were 1,800 deaths registered in Australia for which Indigenous status was not stated, representing 1.3% of all deaths registered. The Australian Capital Territory, Queensland, Victoria and New South Wales had the highest proportions of not stated responses in 2008.

As a proportion of all deaths registered, deaths for which Indigenous status was not stated increased from 1.0% in 2007 to 1.3% in 2008. This was largely due to an increase in the number of deaths in New South Wales for which Indigenous status was not stated; from 221 in 2007 to 525 in 2008. Victoria also recorded a relatively large increase, with the number of deaths for which Indigenous status was not stated increasing from 439 in 2007 to 549 in 2008. The Australian Capital Territory recorded a decrease in the number of deaths for which Indigenous status was not stated, from 107 in 2007 to 60 in 2008.

It is worth noting that the number of deaths in 2008 for which Indigenous status was not stated (1,800) is of a similar magnitude to the total number of deaths of Indigenous persons (2,500). Despite the relatively low proportion of deaths with unidentified Indigenous status (1.3%), it is likely that some of these were in fact deaths of Indigenous persons, contributing to under-identification of Indigenous deaths.

3.3 DEATHS, Indigenous status—2008

<i>State or territory</i>	INDIGENOUS		NON-INDIGENOUS		NOT STATED		TOTAL
	<i>no.</i>	<i>%</i>	<i>no.</i>	<i>%</i>	<i>no.</i>	<i>%</i>	<i>no.</i>
New South Wales	559	1.1	47 698	97.8	525	1.1	48 782
Victoria	97	0.3	34 851	98.2	549	1.5	35 497
Queensland	562	2.1	26 260	96.1	513	1.9	27 335
South Australia	141	1.1	12 402	98.3	73	0.6	12 616
Western Australia	605	4.7	12 067	94.6	80	0.6	12 752
Tasmania	24	0.6	4 192	99.4	3	0.1	4 219
Northern Territory	467	44.9	570	54.8	4	0.4	1 041
Australian Capital Territory	16	0.9	1 621	95.5	60	3.5	1 697
Australia^(a)	2 472	1.7	139 667	97.0	1 807	1.3	143 946

(a) Includes Other Territories.

Other factors influencing identification

There are several data collection forms on which people are asked to state whether they are of Indigenous origin. Due to a number of factors the results across various collections are not always consistent. These factors may include:

- how the information is collected (e.g. census, survey, or administrative data);
- who provides the information (e.g. the person in question, a relative, a health professional, or an official);
- the perception of how the information will be used;
- educational programs about identifying as Indigenous; and
- cultural aspects associated with identifying as Indigenous.

These factors may also influence data collected for death certificates, affecting the identification of Indigenous registered deaths.

AGE AT DEATH

Care should be exercised when analysing Indigenous deaths by age as differences in identification by age may lead to biased results.

3.4 AGE AT DEATH, Indigenous status—2008

State or territory (a)	0	1–14	15–24	25–34	35–44	45–54	55–64	65 years and over	Total(b)
	no.	no.	no.	no.	no.	no.	no.	no.	no.
MALES									
Indigenous									
New South Wales	12	6	13	23	32	42	54	135	317
Queensland	16	6	23	23	38	48	54	88	296
South Australia	np	np	np	8	14	13	11	20	72
Western Australia	17	8	20	35	45	74	53	95	347
Northern Territory	np	np	22	20	np	41	51	53	237
Non-Indigenous									
New South Wales	227	84	216	364	641	1 374	2 504	18 746	24 162
Queensland	151	60	173	245	411	798	1 659	10 385	13 882
South Australia	np	np	np	97	141	303	605	4 881	6 142
Western Australia	41	23	102	138	193	382	734	4 674	6 287
Northern Territory	np	np	12	10	np	44	84	199	384
Total(c)									
New South Wales	241	91	233	391	682	1 442	2 603	19 074	24 765
Queensland	174	69	204	279	468	865	1 745	10 658	14 462
South Australia	31	19	74	109	159	321	618	4 923	6 255
Western Australia	58	33	125	178	249	464	797	4 788	6 692
Northern Territory	16	10	34	31	59	85	135	252	624
FEMALES									
Indigenous									
New South Wales	11	5	7	9	25	28	40	116	242
Queensland	20	5	5	14	22	28	52	120	266
South Australia	np	np	np	4	5	17	11	23	69
Western Australia	11	4	13	17	20	34	36	123	258
Northern Territory	np	np	11	17	np	41	43	75	230
Non-Indigenous									
New South Wales	159	53	88	132	311	801	1 587	20 403	23 536
Queensland	108	42	66	107	199	462	903	10 491	12 378
South Australia	np	np	np	31	89	206	416	5 466	6 260
Western Australia	38	14	39	53	103	204	408	4 921	5 780
Northern Territory	np	np	4	6	np	24	25	121	186
Total(c)									
New South Wales	171	59	99	144	338	843	1 643	20 717	24 017
Queensland	134	49	72	124	237	511	971	10 775	12 873
South Australia	28	14	21	35	96	226	429	5 512	6 361
Western Australia	50	18	54	73	128	240	448	5 049	6 060
Northern Territory	8	9	15	23	32	65	68	197	417

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Victoria, Tasmania and the Australian Capital Territory are excluded due to small numbers of Indigenous deaths.

(b) Includes deaths for which age of death was not stated.

(c) Includes deaths for which Indigenous status was not stated.

3.4 AGE AT DEATH, Indigenous status—2008 *continued*

State or territory (a)	0	1–14	15–24	25–34	35–44	45–54	55–64	65 years and over	Total(b)
	no.	no.	no.	no.	no.	no.	no.	no.	no.
PERSONS									
Indigenous									
New South Wales	23	11	20	32	57	70	94	251	559
Queensland	36	11	28	37	60	76	106	208	562
South Australia	np	np	10	12	19	30	22	43	141
Western Australia	28	12	33	52	65	108	89	218	605
Northern Territory	15	11	33	37	65	82	94	128	467
Non-Indigenous									
New South Wales	386	137	304	496	952	2 175	4 091	39 149	47 698
Queensland	259	102	239	352	610	1 260	2 562	20 876	26 260
South Australia	np	np	82	128	230	509	1 021	10 347	12 402
Western Australia	79	37	141	191	296	586	1 142	9 595	12 067
Northern Territory	9	8	16	16	24	68	109	320	570
Total(c)									
New South Wales	412	150	332	535	1 020	2 285	4 246	39 791	48 782
Queensland	308	118	276	403	705	1 376	2 716	21 433	27 335
South Australia	59	33	95	144	255	547	1 047	10 435	12 616
Western Australia	108	51	179	251	377	704	1 245	9 837	12 752
Northern Territory	24	19	49	54	91	150	203	449	1 041

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Victoria, Tasmania and the Australian Capital Territory are excluded due to small numbers of Indigenous deaths.

(b) Includes deaths for which age of death was not stated.

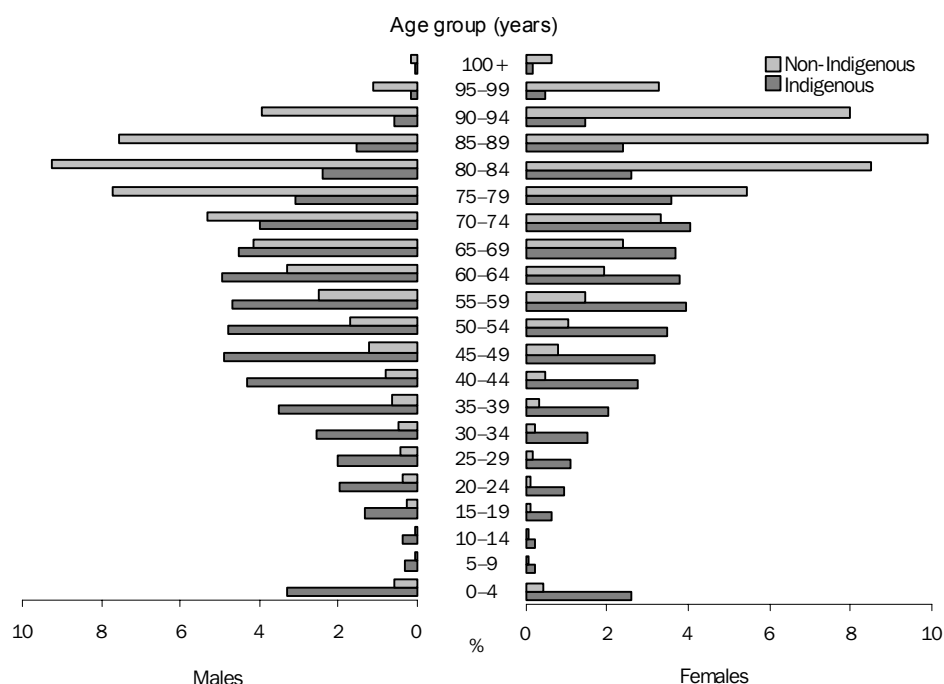
(c) Includes deaths for which Indigenous status was not stated.

AGE AT DEATH
continued

Graph 3.5 illustrates the differences between the age structure of deaths of the Indigenous and non-Indigenous populations for the period 2006–2008. Whereas deaths of non-Indigenous persons are concentrated in the older age groups, deaths of Indigenous persons are more widely spread across all age groups.

Care should be exercised when analysing Indigenous and non-Indigenous age at death, as the data may be influenced by differences in identification by age, as well as different age structures of the two populations.

3.5 PROPORTION OF DEATHS(a)(b), Indigenous status(c), Age group(d) and sex—2006–2008



- (a) Victoria, Tasmania and the Australian Capital Territory are excluded due to small numbers of Indigenous deaths.
 (b) Non-Indigenous deaths calculated as the proportion of all non-Indigenous deaths registered. Indigenous deaths calculated as the proportion of all Indigenous deaths registered.
 (c) Excludes deaths for which Indigenous status was not stated.
 (d) Excludes deaths for which age of death was not stated.

Age-specific death rates

In this section, age-specific death rates (ASDRs) have been calculated for New South Wales and Queensland combined and South Australia, Western Australia and the Northern Territory combined. Victoria, Tasmania and the Australian Capital Territory are excluded due to small numbers of Indigenous deaths.

The non-reporting and/or incorrect reporting of a person's Indigenous status on the death registration form means that death rates calculated using the number of registered Indigenous deaths are underestimates of the true death rates prevalent among Indigenous Australians.

For both combined regions, death rates for 2006–2008 for Indigenous males and females in all age groups were higher than rates for non-Indigenous males and females (table 3.6).

For New South Wales and Queensland combined, ASDRs for Indigenous Australians aged 25 to 64 years were more than twice the rates for non-Indigenous Australians. For both males and females, the largest difference was for persons aged 35–44 years, where Indigenous age-specific death rates were more than three times higher than those recorded for non-Indigenous males and females respectively.

Age-specific death rates *continued*

For South Australia, Western Australia and the Northern Territory combined, differences between ASDRs for Indigenous and non-Indigenous Australians were greater. The greatest differences occurred among males aged 25 to 54 years and females aged 25 to 64 years. Rates for Indigenous persons in these ages were at least five times those recorded for non-Indigenous persons.

The denominators used in calculating Indigenous age-specific death rates were the 30 June 2007 projections (Series B) from *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians, 1991 to 2021* (cat. no. 3238.0).

3.6 AGE-SPECIFIC DEATH RATES(a), Indigenous status and sex—2006–2008

MALES				FEMALES		
	Indigenous(b)	Non-Indigenous	Rate ratio(c)	Indigenous(b)	Non-Indigenous	Rate ratio(c)
NSW/QLD (d)						
0(e)	8.5	5.1	1.7	7.3	3.8	1.9
1–4	51.3	23.9	2.1	33.6	18.4	1.8
5–14	20.4	10.9	1.9	12.5	8.4	1.5
15–24	103.8	56.9	1.8	46.3	23.0	2.0
25–34	199.2	81.1	2.5	114.7	32.9	3.5
35–44	398.7	127.7	3.1	258.1	66.5	3.9
45–54	797.6	281.1	2.8	495.9	167.9	3.0
55–64	1 651.6	670.5	2.5	1 144.0	396.5	2.9
65 and over	5 325.5	4 251.6	1.3	4 246.4	3 741.8	1.1
SA/WA/NT (f)						
0(e)	11.9	3.2	3.7	9.5	3.2	2.9
1–4	55.2	24.4	2.3	56.9	13.9	4.1
5–14	41.2	8.1	5.1	20.9	7.3	2.9
15–24	253.2	65.3	3.9	134.6	25.9	5.2
25–34	503.5	97.0	5.2	280.4	36.7	7.6
35–44	1 005.6	133.2	7.6	507.7	72.3	7.0
45–54	1 632.9	274.2	6.0	1 048.6	164.0	6.4
55–64	2 826.3	644.4	4.4	2 057.2	383.2	5.4
65 and over	7 278.2	4 185.8	1.7	6 256.2	3 689.4	1.7

(a) Deaths per 100,000 population, except age 0.

(b) Indigenous rates are based on registered deaths and are therefore likely to be underestimated.

(c) Indigenous rate divided by the non-Indigenous rate.

(d) Data for New South Wales and Queensland combined.

(e) Infant deaths per 1,000 live births.

(f) Data for South Australia, Western Australia and the Northern Territory combined.

Median age at death

Care should be exercised when analysing Indigenous median age at death, as it may also be affected by differences in identification by age. For example, higher levels of identification of Indigenous infant deaths compared with older age groups may result in the median age at death being underestimated.

Median age at death is also influenced to some extent by the age structure of a population, which itself has been influenced by the ages at which deaths occur. The Indigenous population is younger than the non-Indigenous population and this is reflected in the median age at death of the two populations (Baade & Coory, 2003).

Median age at death
continued

In 2008, for the selected states and territories presented in table 3.7, the median age at death of Indigenous males ranged from 49 to 60 years while the median age at death for Indigenous females ranged from 54 to 64 years. In contrast, the median age at death for non-Indigenous males and females was considerably higher, ranging from 66 to 79 years and from 76 to 85 years respectively.

3.7 MEDIAN AGE AT DEATH(a), Indigenous status(b)—2003–2008

	NSW	Qld	SA	WA	NT
MALES					
Indigenous					
2003	56.8	51.2	48.8	50.2	46.3
2004	55.8	53.7	49.5	50.0	43.8
2005	54.3	51.1	42.4	52.8	45.8
2006	59.3	55.6	50.4	47.9	45.4
2007	58.1	54.7	50.5	53.3	45.9
2008	59.9	53.2	49.0	51.2	52.1
Non-Indigenous					
2003	76.5	75.9	77.7	76.1	65.9
2004	77.0	76.2	77.6	76.3	63.0
2005	77.2	76.4	77.9	76.6	63.7
2006	77.8	76.7	78.3	76.9	64.7
2007	78.1	77.1	78.7	76.9	64.6
2008	78.5	77.3	79.2	77.1	66.3
FEMALES					
Indigenous					
2003	58.9	62.1	50.0	55.0	52.8
2004	62.7	57.9	53.5	63.6	54.0
2005	65.8	59.5	47.5	57.8	50.4
2006	64.8	57.0	59.3	57.0	55.3
2007	63.0	59.5	58.3	59.3	55.7
2008	63.8	62.3	53.5	64.0	56.0
Non-Indigenous					
2003	82.7	82.2	83.2	82.4	74.5
2004	82.8	82.5	83.3	82.3	71.3
2005	83.1	82.6	83.7	83.2	70.5
2006	83.5	83.1	84.1	83.1	75.0
2007	83.7	83.3	84.3	83.4	69.3
2008	84.2	83.7	84.6	84.1	75.7

- (a) Victoria, Tasmania and the Australian Capital Territory are excluded due to small numbers of Indigenous deaths.
- (b) Care should be exercised when comparing median age at death of Indigenous and non-Indigenous Australians. See commentary.

INFANT MORTALITY RATE

Table 3.8 presents infant mortality rates, calculated as the number of infant deaths per 1,000 live births registered during a specific period. Rates for Indigenous Australians are around twice the rates for all Australians.

3.8 INFANT MORTALITY RATES (a)(b), Indigenous status(c)—2003–2008

	NSW	Qld	SA	WA	NT
INDIGENOUS					
Male					
2003–2005	8.8	14.6	7.1	13.9	21.2
2004–2006	7.9	14.5	8.2	13.0	21.0
2005–2007	10.0	11.0	10.2	10.6	19.1
2006–2008	8.3	8.4	6.8	11.5	15.1
Female					
2003–2005	7.9	6.9	8.3	11.6	9.5
2004–2006	7.0	7.6	4.9	10.7	12.1
2005–2007	7.7	7.2	7.4	9.8	12.1
2006–2008	7.1	7.4	5.9	8.8	11.9
Persons					
2003–2005	8.4	10.9	7.7	12.8	15.6
2004–2006	7.5	11.1	6.7	11.9	16.7
2005–2007	8.9	9.1	8.9	10.2	15.7
2006–2008	7.7	7.9	6.4	10.1	13.6
ALL PERSONS					
Persons					
2003–2005	4.7	5.0	4.0	4.2	9.5
2004–2006	4.8	5.2	3.8	4.5	9.7
2005–2007	4.7	5.1	4.3	3.9	9.0
2006–2008	4.5	5.1	3.5	3.5	7.8

- (a) Infant deaths per 1,000 live births. The volatility in infant mortality rates is partially due to the relatively small number of infant deaths registered.
- (b) Victoria, Tasmania and the Australian Capital Territory are excluded due to small numbers of registered Indigenous deaths.
- (c) Deaths for whom Indigenous status was not stated are excluded. As a result, Indigenous infant mortality rates may be underestimated.

EXPERIMENTAL

INDIGENOUS LIFE TABLES

Life tables for the Indigenous population for the period 2005 to 2007 were published in May 2009 in *Experimental Life Tables for Aboriginal and Torres Strait Islander Australians, 2005–2007* (cat. no. 3302.0.55.003).

At the national level for 2005–2007, life expectancy at birth for Indigenous males is estimated to be 67.2 years, 11.5 years less than life expectancy at birth for non-Indigenous males (78.7 years). Life expectancy at birth for Indigenous females is estimated to be 72.9 years, 9.7 years less than life expectancy at birth for non-Indigenous females (82.6 years).

EXPERIMENTAL
INDIGENOUS LIFE TABLES
continued

Life expectancy at birth differs across the states and territories (table 3.9). For Indigenous males, life expectancy at birth is highest in New South Wales (69.9 years) and lowest in the Northern Territory (61.5 years). A similar pattern exists for Indigenous females, with the highest life expectancy at birth in New South Wales (75.0 years) and the lowest in the Northern Territory (69.2 years).

Differences in life expectancy at birth estimates between non-Indigenous and Indigenous Australians are greatest in the Northern Territory (14.2 years for males and 11.9 years for females) and Western Australia (14.0 years for males and 12.5 years for females).

3.9 LIFE EXPECTANCY AT BIRTH(a), Indigenous status—2005–2007

LIFE EXPECTANCY AT BIRTH				Difference between non-Indigenous and Indigenous life expectancy at birth(b)
	Indigenous	Non-Indigenous	Total(c)	
	years	years	years	years
MALES				
NSW	69.9	78.7	78.5	8.8
Qld	68.3	78.6	78.4	10.4
WA	65.0	79.0	78.7	14.0
NT	61.5	75.7	72.0	14.2
Aust.(d)	67.2	78.7	78.5	11.5
FEMALES				
NSW	75.0	82.5	82.4	7.5
Qld	73.6	82.5	82.3	8.9
WA	70.4	82.9	82.5	12.5
NT	69.2	81.2	77.6	11.9
Aust.(d)	72.9	82.6	82.4	9.7
DIFFERENCE BETWEEN MALES AND FEMALES				
NSW	-5.1	-3.9	-3.9	..
Qld	-5.3	-3.9	-4.0	..
WA	-5.4	-3.8	-3.9	..
NT	-7.7	-5.4	-5.6	..
Aust.(d)	-5.6	-3.8	-3.9	..

(a) Due to significant changes in methodology, estimates of life expectancy at birth for 2005–2007 are not comparable to previously published estimates.

(b) Differences are based on unrounded estimates.

(c) Estimates of life expectancy at birth for the total population presented in this table differ from estimates in Deaths, Australia, 2006 (cat. no. 3302.0). See paragraph 38 of the Explanatory Notes.

(d) Includes all states and territories.

CHAPTER **4** **LIFE TABLES**

4.1 LIFE TABLE, Australia—Males—2006–2008

	<i>lx(a)</i>	<i>qx(b)</i>	<i>Lx(c)</i>	<i>ex(d)</i>		<i>lx(a)</i>	<i>qx(b)</i>	<i>Lx(c)</i>	<i>ex(d)</i>
<i>Age</i>	no.	rate	no.	years	<i>Age</i>	no.	rate	no.	years
.....								
0	100 000	0.00506	99 552	79.2	51	94 952	0.00328	94 799	30.6
1	99 494	0.00038	99 474	78.6	52	94 641	0.00355	94 475	29.7
2	99 456	0.00026	99 443	77.6	53	94 305	0.00385	94 126	28.8
3	99 431	0.00018	99 421	76.6	54	93 942	0.00416	93 749	27.9
4	99 412	0.00014	99 405	75.6	55	93 551	0.00451	93 343	27.0
5	99 398	0.00012	99 393	74.6	56	93 129	0.00490	92 904	26.2
6	99 387	0.00011	99 382	73.6	57	92 672	0.00534	92 428	25.3
7	99 376	0.00010	99 371	72.7	58	92 177	0.00584	91 912	24.4
8	99 367	0.00009	99 362	71.7	59	91 639	0.00640	91 351	23.6
9	99 357	0.00009	99 352	70.7	60	91 053	0.00703	90 738	22.7
10	99 348	0.00010	99 343	69.7	61	90 413	0.00775	90 068	21.9
11	99 338	0.00010	99 333	68.7	62	89 712	0.00857	89 334	21.0
12	99 328	0.00011	99 322	67.7	63	88 944	0.00948	88 528	20.2
13	99 317	0.00014	99 310	66.7	64	88 100	0.01051	87 645	19.4
14	99 303	0.00017	99 295	65.7	65	87 175	0.01164	86 675	18.6
15	99 286	0.00025	99 275	64.7	66	86 160	0.01286	85 614	17.8
16	99 262	0.00036	99 245	63.7	67	85 052	0.01413	84 459	17.0
17	99 227	0.00047	99 204	62.8	68	83 851	0.01549	83 210	16.3
18	99 180	0.00059	99 152	61.8	69	82 551	0.01701	81 859	15.5
19	99 122	0.00067	99 089	60.8	70	81 147	0.01873	80 397	14.8
20	99 055	0.00072	99 020	59.9	71	79 627	0.02071	78 814	14.1
21	98 984	0.00075	98 947	58.9	72	77 979	0.02299	77 095	13.3
22	98 910	0.00075	98 873	57.9	73	76 186	0.02562	75 224	12.6
23	98 835	0.00076	98 798	57.0	74	74 234	0.02865	73 185	12.0
24	98 760	0.00077	98 723	56.0	75	72 107	0.03212	70 965	11.3
25	98 685	0.00078	98 646	55.1	76	69 791	0.03606	68 550	10.7
26	98 607	0.00081	98 567	54.1	77	67 274	0.04052	65 929	10.0
27	98 527	0.00084	98 486	53.2	78	64 548	0.04553	63 097	9.4
28	98 444	0.00088	98 401	52.2	79	61 610	0.05112	60 052	8.9
29	98 358	0.00091	98 314	51.3	80	58 460	0.05734	56 800	8.3
30	98 269	0.00094	98 223	50.3	81	55 108	0.06421	53 353	7.8
31	98 177	0.00096	98 130	49.3	82	51 569	0.07177	49 731	7.3
32	98 082	0.00100	98 033	48.4	83	47 868	0.08003	45 962	6.8
33	97 984	0.00103	97 934	47.4	84	44 037	0.08902	42 083	6.4
34	97 883	0.00107	97 832	46.5	85	40 117	0.09876	38 138	5.9
35	97 779	0.00111	97 725	45.5	86	36 155	0.10926	34 177	5.5
36	97 671	0.00116	97 614	44.6	87	32 205	0.12055	30 256	5.2
37	97 558	0.00121	97 499	43.6	88	28 323	0.13313	26 428	4.8
38	97 439	0.00128	97 377	42.7	89	24 552	0.14873	22 714	4.5
39	97 315	0.00135	97 250	41.7	90	20 900	0.16614	19 145	4.2
40	97 183	0.00143	97 114	40.8	91	17 428	0.18349	15 802	3.9
41	97 044	0.00153	96 971	39.9	92	14 230	0.19946	12 779	3.6
42	96 896	0.00163	96 818	38.9	93	11 392	0.21438	10 137	3.4
43	96 738	0.00175	96 654	38.0	94	8 950	0.22891	7 893	3.2
44	96 569	0.00188	96 479	37.0	95	6 901	0.24366	6 031	3.0
45	96 387	0.00203	96 290	36.1	96	5 220	0.25920	4 517	2.9
46	96 191	0.00219	96 087	35.2	97	3 867	0.27604	3 311	2.7
47	95 980	0.00237	95 868	34.3	98	2 799	0.29288	2 370	2.6
48	95 752	0.00257	95 631	33.3	99	1 979	0.30971	1 657	2.4
49	95 506	0.00279	95 375	32.4	100	1 366	0.32655	(e)3 145	2.3
50	95 240	0.00302	95 098	31.5					

(a) *lx* — number of persons surviving to exact age *x*.(b) *qx* — proportion of persons dying between exact age *x* and exact age *x*+1.(c) *Lx* — number of person years lived within the age interval *x* to *x*+1.(d) *ex* — expectation of life at exact age *x*.(e) At age 100, *L*₁₀₀₊ is shown.

4.2 LIFE TABLE, Australia—Females—2006–2008

	$lx(a)$	$qx(b)$	$Lx(c)$	$ex(d)$		$lx(a)$	$qx(b)$	$Lx(c)$	$ex(d)$
Age	no.	rate	no.	years	Age	no.	rate	no.	years
0	100 000	0.00442	99 608	83.7	51	97 104	0.00199	97 008	34.3
1	99 558	0.00032	99 540	83.1	52	96 911	0.00214	96 808	33.3
2	99 526	0.00018	99 516	82.1	53	96 703	0.00231	96 593	32.4
3	99 508	0.00014	99 501	81.1	54	96 480	0.00250	96 361	31.5
4	99 494	0.00011	99 488	80.2	55	96 239	0.00271	96 110	30.6
5	99 482	0.00010	99 477	79.2	56	95 978	0.00295	95 838	29.6
6	99 473	0.00008	99 468	78.2	57	95 695	0.00322	95 543	28.7
7	99 464	0.00007	99 460	77.2	58	95 387	0.00353	95 221	27.8
8	99 457	0.00007	99 453	76.2	59	95 050	0.00388	94 869	26.9
9	99 450	0.00006	99 447	75.2	60	94 681	0.00427	94 483	26.0
10	99 444	0.00006	99 441	74.2	61	94 278	0.00469	94 060	25.1
11	99 437	0.00007	99 434	73.2	62	93 836	0.00514	93 598	24.2
12	99 430	0.00008	99 427	72.2	63	93 354	0.00562	93 095	23.4
13	99 423	0.00010	99 418	71.2	64	92 829	0.00615	92 548	22.5
14	99 413	0.00013	99 407	70.2	65	92 259	0.00673	91 953	21.6
15	99 400	0.00017	99 392	69.2	66	91 638	0.00738	91 304	20.8
16	99 383	0.00021	99 373	68.2	67	90 961	0.00813	90 597	19.9
17	99 362	0.00025	99 350	67.2	68	90 222	0.00898	89 823	19.1
18	99 337	0.00027	99 324	66.3	69	89 412	0.00994	88 974	18.3
19	99 311	0.00028	99 297	65.3	70	88 523	0.01104	88 042	17.4
20	99 283	0.00028	99 269	64.3	71	87 545	0.01229	87 016	16.6
21	99 255	0.00028	99 242	63.3	72	86 469	0.01370	85 887	15.8
22	99 228	0.00028	99 214	62.3	73	85 285	0.01529	84 643	15.0
23	99 200	0.00028	99 186	61.4	74	83 980	0.01713	83 273	14.3
24	99 171	0.00029	99 157	60.4	75	82 542	0.01926	81 760	13.5
25	99 142	0.00030	99 127	59.4	76	80 952	0.02176	80 086	12.8
26	99 112	0.00032	99 097	58.4	77	79 190	0.02468	78 230	12.0
27	99 081	0.00033	99 064	57.4	78	77 236	0.02808	76 170	11.3
28	99 048	0.00035	99 030	56.4	79	75 067	0.03202	73 886	10.6
29	99 013	0.00037	98 994	55.5	80	72 664	0.03654	71 358	10.0
30	98 976	0.00039	98 957	54.5	81	70 008	0.04172	68 570	9.3
31	98 937	0.00041	98 917	53.5	82	67 088	0.04759	65 514	8.7
32	98 897	0.00043	98 875	52.5	83	63 895	0.05421	62 185	8.1
33	98 854	0.00046	98 831	51.5	84	60 431	0.06161	58 590	7.6
34	98 808	0.00049	98 784	50.6	85	56 708	0.06990	54 745	7.0
35	98 760	0.00053	98 734	49.6	86	52 744	0.07938	50 668	6.5
36	98 708	0.00057	98 680	48.6	87	48 557	0.09038	46 378	6.0
37	98 652	0.00061	98 622	47.6	88	44 169	0.10310	41 903	5.6
38	98 591	0.00066	98 559	46.7	89	39 615	0.11734	37 294	5.2
39	98 526	0.00072	98 491	45.7	90	34 966	0.13277	32 640	4.8
40	98 455	0.00078	98 417	44.7	91	30 324	0.14908	28 048	4.4
41	98 378	0.00085	98 337	43.8	92	25 803	0.16598	23 637	4.1
42	98 294	0.00093	98 249	42.8	93	21 520	0.18320	19 517	3.9
43	98 203	0.00102	98 153	41.9	94	17 578	0.20051	15 779	3.6
44	98 103	0.00111	98 049	40.9	95	14 053	0.21785	12 483	3.4
45	97 993	0.00122	97 935	39.9	96	10 992	0.23522	9 658	3.2
46	97 874	0.00133	97 810	39.0	97	8 406	0.24902	7 321	3.0
47	97 744	0.00145	97 674	38.0	98	6 313	0.26283	5 450	2.9
48	97 603	0.00157	97 527	37.1	99	4 654	0.27664	3 982	2.8
49	97 449	0.00170	97 367	36.2	100	3 366	0.29045	(e) 8 863	2.6
50	97 283	0.00184	97 194	35.2					

(a) lx — number of persons surviving to exact age x .(b) qx — proportion of persons dying between exact age x and exact age $x+1$.(c) Lx — number of person years lived within the age interval x to $x+1$.(d) ex — expectation of life at exact age x .(e) At age 100, L_{100+} is shown.

4.3**LIFE EXPECTANCY, Australia(a)—Selected years(b)**

	AGE (YEARS)									
	0	1	10	20	30	40	50	60	70	80
MALE										
1988	73.1	72.8	64.0	54.4	45.2	35.8	26.7	18.4	11.6	6.7
1993	75.0	74.5	65.7	56.0	46.6	37.2	28.0	19.5	12.4	7.0
1996–1998	75.9	75.3	66.5	56.8	47.4	38.1	28.8	20.2	12.9	7.3
2001–2003	77.8	77.2	68.3	58.6	49.1	39.6	30.4	21.6	13.9	7.9
2002–2004	78.1	77.5	68.6	58.9	49.4	39.9	30.6	21.8	14.1	8.0
2003–2005	78.5	77.9	69.0	59.2	49.7	40.2	31.0	22.2	14.4	8.2
2004–2006	78.7	78.1	69.3	59.5	49.9	40.4	31.2	22.3	14.5	8.2
2005–2007	79.0	78.4	69.6	59.7	50.2	40.7	31.4	22.6	14.7	8.3
2006–2008	79.2	78.6	69.7	59.9	50.3	40.8	31.5	22.7	14.8	8.3
FEMALE										
1988	79.5	79.1	70.3	60.5	50.8	41.1	31.7	22.9	15.0	8.5
1993	80.9	80.3	71.5	61.6	51.8	42.2	32.7	23.7	15.6	8.9
1996–1998	81.5	80.9	72.0	62.2	52.4	42.7	33.3	24.3	16.0	9.1
2001–2003	82.8	82.2	73.3	63.4	53.6	43.9	34.4	25.3	16.9	9.7
2002–2004	83.0	82.4	73.5	63.6	53.8	44.1	34.6	25.5	17.0	9.8
2003–2005	83.3	82.7	73.8	63.9	54.1	44.4	34.9	25.7	17.2	9.9
2004–2006	83.5	82.9	74.0	64.1	54.3	44.5	35.0	25.8	17.3	9.9
2005–2007	83.7	83.1	74.2	64.3	54.5	44.7	35.2	26.0	17.4	10.0
2006–2008	83.7	83.1	74.2	64.3	54.5	44.7	35.2	26.0	17.4	10.0

- (a) Prior to 1995 life expectancy was based on annual life tables calculated by the ABS. From 1995 to 1998 the life tables were produced as a joint venture between the ABS and the Australian Government Actuary. For census years the Australian Government Actuary also produces life tables. See paragraph 44 of the Explanatory Notes for more information.
- (b) From 1995 onwards life expectancy has been calculated using three years of data.

4.4

PROBABILITY OF SURVIVING FROM BIRTH TO SPECIFIC AGES,

Australia(a)—Selected years(b)

	AGE (YEARS)									
	1	10	20	30	40	50	60	70	80	
MALES										
1988	99.0	98.7	98.0	96.5	95.1	92.5	85.4	68.2	37.6	
1993	99.3	99.0	98.6	97.4	96.0	93.7	87.7	72.5	43.5	
1996–1998	99.4	99.2	98.7	97.4	96.0	93.9	88.6	74.7	46.7	
2001–2003	99.4	99.3	98.9	97.9	96.7	94.7	90.1	78.7	53.4	
2002–2004	99.5	99.3	98.9	98.0	96.9	94.8	90.4	79.3	54.4	
2003–2005	99.5	99.3	99.0	98.1	96.9	94.9	90.6	79.9	55.8	
2004–2006	99.5	99.3	99.0	98.1	97.0	95.1	90.8	80.4	56.7	
2005–2007	99.5	99.3	99.0	98.2	97.1	95.1	90.9	80.8	58.0	
2006–2008	99.5	99.3	99.1	98.3	97.2	95.2	91.1	81.1	58.5	
FEMALES										
1988	99.2	99.0	98.7	98.2	97.5	95.9	91.7	81.9	59.1	
1993	99.5	99.3	99.0	98.6	98.0	96.6	93.1	84.3	63.1	
1996–1998	99.5	99.4	99.1	98.7	98.1	96.7	93.3	85.2	65.4	
2001–2003	99.6	99.4	99.2	98.9	98.3	97.0	94.1	87.1	69.5	
2002–2004	99.6	99.4	99.2	98.9	98.3	97.1	94.3	87.4	70.2	
2003–2005	99.5	99.4	99.2	98.9	98.4	97.1	94.4	87.8	71.1	
2004–2006	99.5	99.4	99.3	98.9	98.4	97.2	94.5	88.1	71.6	
2005–2007	99.6	99.4	99.3	99.0	98.4	97.3	94.6	88.4	72.4	
2006–2008	99.6	99.4	99.3	99.0	98.5	97.3	94.7	88.5	72.7	

- (a) Based on life tables. Prior to 1995 life expectancy was based on annual life tables calculated by the ABS. From 1995 to 1998 life tables were produced as a joint venture between the ABS and the Australian Government Actuary. For census years the Australian Government Actuary also produces life tables. See paragraph 44 of the Explanatory Notes for more information.
- (b) From 1995 onwards life expectancy has been calculated using three years of data.

EXPLANATORY NOTES

INTRODUCTION

- 1** This publication contains statistics for deaths and mortality in Australia. Detailed information can be obtained from data cubes (in Microsoft Excel format) available for download from the ABS website (see paragraph 56).
- 2** A glossary is provided detailing definitions of terminology used. Also provided is a list of abbreviations.

SCOPE AND COVERAGE

- 3** The statistics in this publication relate to the number of deaths registered during the calendar year shown, unless otherwise stated. Statistics relating to deaths by year of occurrence can be obtained from data cubes available for download from the ABS website (see paragraph 56).

Scope of death statistics

- 4** The ABS Death Registrations collection includes all deaths that occurred and were registered in Australia, including deaths of persons whose place of usual residence is overseas. Deaths of Australian residents that occurred outside Australia may be registered by individual Registrars, but are not included in ABS deaths statistics.
- 5** The scope of the statistics includes:
 - all deaths being registered for the first time;
 - deaths of temporary visitors to Australia (including visitors from Norfolk Island);
 - deaths occurring within Australian Territorial waters;
 - deaths occurring in Australian Antarctic Territories or other external territories (excluding Norfolk Island);
 - deaths occurring in transit (i.e. deaths on ships or planes) if registered in the state of 'next port of call';
 - deaths of Australian nationals employed overseas at legations and consular offices (i.e. deaths of Australian diplomats while overseas) where able to be identified; and
 - deaths that occurred in earlier years that have not previously been registered (late registrations).
- 6** The scope of the statistics excludes:
 - still births/fetal deaths (these are accounted for in perinatal death statistics published in *Perinatal Deaths, Australia*, cat. no. 3304.0, and previously, *Causes of Death, Australia*, cat. no. 3303.0);
 - repatriation of human remains of decedents whose death occurred overseas;
 - deaths overseas of foreign diplomatic staff (where these are able to be identified); and
 - deaths occurring on Norfolk Island.
- 7** Up to and including the 2006 issue of *Deaths, Australia* (cat. no. 3302.0), the scope for each reference year of the Death Registrations collection included:
 - all deaths registered in Australia for the reference year and received by the ABS in the reference year;
 - deaths registered during the two years prior to the reference year but not received by the ABS until the reference year; and
 - deaths registered in the reference year and received by the ABS in the first quarter of the subsequent year.

Scope of death statistics
continued

8 For example, death records received by the ABS during the March quarter 2007 which were initially registered in 2006 (but not fully completed until 2007) were assigned to the 2006 reference year. Any registrations relating to 2006 which were received by the ABS after the end of the March quarter 2007 were assigned to the 2007 reference year.

9 Under these rules, it was possible for a death registration to not be recorded in the collection. For 2007 onwards, the scope of the Death Registrations collection has been reviewed and amended. The scope now includes:

- all deaths registered in Australia for the reference year and received by the ABS in the reference year;
- deaths registered in the years prior to the reference year but not received by ABS until the reference year or the first quarter of the subsequent year, provided that these records have not been included in any statistics from earlier periods; and
- deaths registered in the reference year and received by the ABS in the first quarter of the subsequent year.

Coverage of death statistics

10 Ideally, for compiling annual time series, the number of events (deaths) should be recorded as all those occurring within a given reference period such as a calendar year. Due to lags in registration of deaths and the provision of that information to the ABS from state/territory Registrars of Births, Deaths and Marriages, data in this publication are presented on a year of registration basis.

11 In effect there are three dates attributable to each death registration:

- the date of occurrence (of the death);
- the date of registration or inclusion on the state/territory register; and
- the month in which the registered event is provided to the ABS.

CLASSIFICATIONS

Marital status

12 Marital status relates to the registered marital status of the deceased at the time of death, which refers to formally registered marriages or divorces for which a certificate is held.

13 From 2007 onwards, marital status at death is provided by registries as legal marital status. Previously, a mix of legal and social marital status was used by some states and territories.

*Australian Standard
Geographical Classification*

14 The Australian Standard Geographical Classification (ASGC) is a hierarchical classification system consisting of six interrelated classification structures. The ASGC provides a common framework of statistical geography and thereby enables the production of statistics which are comparable and can be spatially integrated.

15 For further information refer to *Australian Standard Geographical Classification (ASGC)* (cat. no. 1216.0).

*Standard Australian
Classification of Countries*

16 The Standard Australian Classification of Countries (SACC) (Second Edition) groups neighbouring countries into progressively broader geographical areas on the basis of their similarity in terms of social, cultural, economic and political characteristics. The SACC (Second Edition) is the revised edition of the Australian Standard Classification of Countries for Social Statistics (ASCCSS) and includes concordances between the SACC (First Edition) and the SACC (Second Edition).

17 For further information refer to *Standard Australian Classification of Countries (SACC) Second Edition* (cat. no. 1269.0).

DATA SOURCES

18 Registration of deaths is the responsibility of state and territory Registrars of Births, Deaths and Marriages. Information about the deceased is acquired from a Death Registration Form (DRF) which is completed by the funeral director, based on information supplied by a relative or other person acquainted with the deceased, or by an official of the institution where the death occurred. As part of the registration process, information on the cause of death is either supplied by the medical practitioner certifying the death on a Medical Certificate of Cause of Death (MCCD), or supplied as a result of a coronial investigation. This information is provided to the ABS by individual Registrars for coding and compilation into aggregate statistics shown in this publication.

State and territory data

19 As a result of an amendment made in 1992 to section 17(a) of the *Acts Interpretation Act 1901–1973 (Cwlth)* the Indian Ocean Territories of Christmas Island and Cocos (Keeling) Islands have been included as part of geographic Australia, hence another category of the state and territory classification has been created. This category is known as 'Other Territories' and includes Christmas Island, the Cocos (Keeling) Islands and Jervis Bay Territory.

20 Prior to 1993, deaths of persons usually resident in Christmas Island and Cocos (Keeling) Islands were included with Off-Shore Areas and Migratory in Western Australia, while deaths of persons usually resident in Jervis Bay Territory were included with the Australian Capital Territory.

21 In 2008 there were 7 deaths of persons usually resident in Christmas Island, the Cocos (Keeling) Islands and Jervis Bay Territory.

22 Death statistics for states and territories have been compiled and presented in respect of the state or territory of usual residence of the deceased, regardless of where in Australia the death occurred and was registered, except where otherwise stated.

23 In the following table data are presented on a state or territory of registration basis. Deaths which took place outside Australia are excluded from the statistics. Deaths of persons who were usual residents of Australia's Other Territories (Christmas Island, Cocos (Keeling) Islands and Jervis Bay Territory) are registered in other Australian states.

DEATHS, State or territory of usual residence and state or territory of registration—2008

State or territory of usual residence	STATE OR TERRITORY OF REGISTRATION								
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
NSW	47 819	219	407	46	18	np	np	260	48 782
Vic.	175	35 187	60	31	27	6	4	7	35 497
Qld	228	27	27 038	8	8	3	12	11	27 335
SA	26	34	13	12 518	7	3	12	3	12 616
WA	19	15	19	np	12 670	—	17	np	12 752
Tas.	9	23	7	np	np	4 171	np	np	4 219
NT	4	6	7	27	9	—	988	—	1 041
ACT	43	3	3	—	np	np	—	1 646	1 697
Aust.(a)	48 325	35 514	27 554	12 642	12 749	4 190	1 041	1 931	143 946

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Includes Other Territories.

State and territory data
continued

24 In 2008 there were 310 deaths registered in Australia of persons usually resident overseas. These have been included in this publication with state and territory of usual residence classified according to the state or territory in which the death was registered.

DEATHS, PERSONS USUALLY RESIDENT OVERSEAS

<i>State or territory of registration</i>	2002	2003	2004	2005	2006	2007	2008
NSW	139	100	98	100	92	95	106
Vic	50	48	56	33	50	46	54
Qld	92	109	81	77	88	83	73
SA	18	19	16	12	8	13	13
WA	47	44	40	46	60	50	45
Tas.	np	10	5	7	6	6	3
NT	13	6	6	12	11	13	13
ACT	np	—	5	4	4	9	3
Aust.	363	336	307	291	319	315	310

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

Sub-state/territory mortality rates

25 Indirect standardised death rates for sub-state/territory regions (for example, Statistical Divisions) presented in this publication are calculated as average rates over three years ending in the reference year. Rates for Australia and the states and territories in all other tables are based on single years of death registration data.

DATA QUALITY

26 In compiling death statistics, the ABS employs a variety of measures to improve the quality of the deaths collection. While every opportunity is undertaken to ensure that the highest quality of statistics are provided, the following are known issues associated with the quality of deaths statistics included in this publication.

27 For the most part, statistics in this publication refer to deaths registered during the calendar year shown. There is usually an interval between the occurrence and registration of a death (referred to as a registration 'lag') and as a result, some deaths occurring in one year are not registered until the following year or later. This can be caused by either a delay in the submission of a completed form to the registry, or a delay by the registry in processing the death.

DEATHS REGISTERED IN 2008, Year of occurrence—Selected years

	STATE OR TERRITORY OF REGISTRATION								
<i>Year of occurrence</i>	<i>NSW</i>	<i>Vic.</i>	<i>Qld</i>	<i>SA</i>	<i>WA</i>	<i>Tas.</i>	<i>NT</i>	<i>ACT</i>	<i>Aust.</i>
2002 or earlier	5	33	np	—	16	4	np	—	62
2003	np	np	—	—	—	—	—	—	5
2004	np	np	np	np	np	np	np	—	17
2005	np	33	5	np	—	—	3	—	43
2006	11	39	8	np	np	np	3	—	77
2007	2 262	2 392	2 372	461	641	224	105	122	8 579
2008	46 043	33 004	25 164	12 178	12 077	3 960	928	1 809	135 163
Total(a)	48 325	35 514	27 554	12 642	12 749	4 190	1 041	1 931	143 946

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Includes not available year of occurrence.

DATA QUALITY *continued**Unknown infant age at death*

28 Of the 143,900 deaths registered in 2008, 93.9% occurred in 2008 while 6.0% occurred in 2007 and the remainder (0.1%) occurred in 2006 or earlier years.

29 For some infant deaths, only limited information on age at death is known. These deaths are included in the following categories:

- not stated minutes and not stated hours (i.e. age at death was under one day) are included in 'Under one day'
- not stated days (i.e. age at death was at least one day but under one month) are included in 'One week to under four weeks'
- not stated months (i.e. age at death was at least one month but under one year) are included in 'Four weeks to under one year'.

Indigenous deaths and mortality rates

30 The term Indigenous is used to refer to Aboriginal and Torres Strait Islander Australians. Those who are identified as being of Aboriginal and/or Torres Strait Islander origin through the death registration process are classified as Indigenous persons.

31 While it is considered likely that most deaths of Indigenous Australians are registered, a proportion of these deaths are not identified as Indigenous by the family, health worker or funeral director during the death registration process. That is, whilst data is provided to the ABS for the Indigenous status question for 99% of all deaths, there are concerns regarding the accuracy of the data. The Indigenous status question is not always directly asked of relatives and friends of the deceased by the funeral director.

32 This publication includes the number of registered Indigenous deaths. However, because of the data quality issues outlined below, more detailed breakdowns of Indigenous deaths are provided for New South Wales, Queensland, South Australia, Western Australia and the Northern Territory only.

33 There are several data collection forms on which people are asked to state whether they are of Indigenous origin. Due to a number of factors, the results are not always consistent. The likelihood that a person will identify, or be identified, as Indigenous on a specific form is known as their propensity to identify as Indigenous. Propensity to identify as Indigenous can be thought of as the proportion of the total, unknown, number of Indigenous people who identify as such on a specific form.

34 Propensity to identify as Indigenous is determined by a range of factors, including how the information is collected; who completes the form; the perception of how the information will be used; education programs about identifying as Indigenous; and cultural issues associated with identifying as Indigenous.

35 In addition to those deaths identified as Indigenous, a number of deaths occur each year where Indigenous status is not stated on the death registration form. In 2008 there were 1,800 deaths registered in Australia for whom Indigenous status was not stated, representing 1.3% of all deaths registered.

36 Quality studies conducted as part of the Census Data Enhancement project have investigated the levels and consistency of Indigenous identification between death registrations and the 2006 Census. See *Information Paper: Census Data Enhancement—Indigenous Mortality Quality Study, 2006–07* (cat. no. 4723.0).

Indigenous life tables

37 Life tables for the Indigenous population for the period 2005 to 2007 were published in May 2009 in *Experimental Life Tables for Aboriginal and Torres Strait Islander Australians, 2005–2007* (cat. no. 3302.0.55.003).

38 Estimates of life expectancy at birth for the total population presented in *Experimental Life Tables for Aboriginal and Torres Strait Islander Australians, 2005–2007* (cat. no. 3302.0.55.003) differ from estimates published in *Deaths, Australia, 2006* (cat. no. 3302.0). Estimates presented in *Experimental Life Tables for Aboriginal and Torres Strait Islander Australians, 2005–2007* (cat. no. 3302.0.55.003) are derived

Indigenous life tables
continued

from abridged life tables with an upper age limit of 85 years and over, using numbers of deaths registered in 2005–2007 and the population as at 30 June 2006, while life expectancy estimates in *Deaths, Australia, 2006* (cat. no. 3302.0) are based on complete life tables with an upper age group of 115 years and over, using deaths according to month of occurrence in 2005–2007 and quarterly population estimates. In addition, graduation processes applied to both sets of life tables differ. See paragraphs 41 to 44 for more information on life tables.

LIFE TABLES

39 A life table is a statistical model used to represent mortality of a population. In its simplest form, a life table is generated from age-specific death rates and the resulting values are used to measure mortality, survivorship and life expectancy.

40 The life tables in this publication are current or period life tables, based on death rates for a short period of time during which mortality has remained much the same. Mortality rates for the Australian and state and territory life tables are based on death registrations and estimated resident population for the period 2006–2008. The life tables do not take into account future assumed improvements in mortality.

41 Life tables are presented separately for males and females. The life table depicts the mortality experience of a hypothetical group of newborn babies throughout their entire lifetime. It is based on the assumption that this group is subject to the age-specific mortality rates of the reference period. Typically this hypothetical group is 100,000 in size.

42 To construct a life table, data on population, deaths and births are needed. Mortality rates are smoothed to avoid fluctuations in the data. Apart from mortality rates themselves (q_x) all other functions of the life table are derived from q_x . The life tables presented in this publication contain four columns of interrelated information. These functions are:

- l_x —the number of persons surviving to exact age x ;
- q_x —the proportion of persons dying between exact age x and exact age $x+1$. It is the mortality rate, from which other functions of the life table are derived;
- L_x —the number of person years lived within the age interval x to $x+1$; and
- e_x —life expectancy at exact age x .

Life tables based on assumed
improvements in mortality

43 Life tables based on assumed improvements in mortality are produced by the ABS using assumptions on future life expectancy at birth, based on recent trends in life expectancy. Mortality rates derived from these life tables are used as inputs to ABS population projections. For further information see *Population Projections, Australia, 2006 to 2101* (cat. no. 3222.0).

Australian life tables

44 The 2006–2008 life tables differ from those published prior to the 1995 edition of this publication in a number of important respects. Firstly, they are based on three years of death registrations and estimated resident population data. This is designed to reduce the impact of year-to-year statistical variations, particularly at younger ages where there are small numbers of deaths and at very old ages where the population at risk is small. Secondly, the deaths and population data are based on Australian residents who are physically present in Australia over the three-year period; i.e. Australian residents temporarily overseas are excluded. Thirdly, they have been actuarially graduated on the same principles which are used for the quinquennial Australian life tables prepared by the Australian Government Actuary.

State and territory life tables

45 Life tables for the states and territories are produced on the same principles as the Australian life tables. For the years 1994–1996 to 1999–2001 these are available in the Demography (cat. nos. 3311.1–3311.8) set of publications. State and territory life tables for the period 2000–2002 are available on request. State and territory life tables for the period 2001–2003 and onwards are published in *Life Tables* (cat. nos. 3302.1.55.001–3302.8.55.001). Note that the release of state/territory life tables for 2006–2008 has been deferred until 11th December 2009.

Statistical Division life tables

46 Due to the deferral of release of state/territory life tables, estimates of life expectancy at birth for Statistical Divisions for 2008 are not yet available. It is expected that these will be available in late February 2010.

47 Life expectancy at birth for Statistical Divisions have been calculated with reference to state and territory life tables, using Brass' Logit System. Small area life tables are based on age-specific death rates for each area, some of which may be zero as no deaths were recorded at those ages. Brass' Logit technique enables the calculation of smooth abridged life tables for regions which have defective age-specific death rates, by adjusting them with reference to a standard life table. The technique does not alter the overall level of mortality, but the age-specific functions of the life table are smoothed.

48 The Brass' Logit technique essentially compares mortality between the regional and standard life tables across ages, then a line of best fit is calculated to describe that relationship by age. The line of best fit is then used in conjunction with the standard life table to determine death rates for the small area life table. For a more detailed description of Brass' Logit System refer to Brass (1975) *Methods for Estimating Fertility and Mortality from Limited and Defective data*.

CAUSES OF DEATH

49 Causes of death information is published under the 3303.0 product family. See *Causes of Death, Australia: Doctor Certified Deaths, Summary Tables, 2008* (cat. no. 3303.0.55.001) scheduled for release on 27 November 2009, and *Causes of Death, Australia, 2008* (cat. no. 3303.0) scheduled for release in March 2010, for more information.

CONFIDENTIALITY

50 The *Census and Statistics Act 1905* provides the authority for the ABS to collect statistical information, and requires that statistical output shall not be published or disseminated in a manner that is likely to enable the identification of a particular person or organisation. This requirement means that the ABS must take care and make assurances that any statistical information about individual respondents cannot be derived from published data.

51 Where necessary, tables in this publication have had small values suppressed or randomised to protect confidentiality. As a result, sums of components may not add exactly to totals.

ROUNDING

52 Calculations as shown in the commentary sections of this publication are based on unrounded figures. Calculations using rounded figures may differ from those published. Where figures have been rounded in tables, discrepancies may occur between sums of component item and totals.

ACKNOWLEDGEMENT

53 The ABS publications draw extensively on information provided freely by individuals, businesses, governments and other organisations. Their continued cooperation is very much appreciated; without it, the wide range of statistics published by the ABS would not be available. Information received by the ABS is treated in strict confidence as required by the *Census and Statistics Act 1905*.

RELATED PRODUCTS

54 Other ABS publications which may be of interest to users include:

- *Australian Demographic Statistics* (cat. no. 3101.0)
- *Australian Demographic Trends* (cat. no. 3102.0)
- *Australian Historical Population Statistics* (cat. no. 3105.0.65.001)
- *Population Projections, Australia, 2006 to 2101* (cat. no. 3222.0)
- *Experimental Estimates and Projections, Aboriginal and Torres Strait Islander Australians, 1991 to 2021* (cat. no. 3238.0)
- *Experimental Estimates of Aboriginal and Torres Strait Islander Australians, Jun 2006* (cat. no. 3238.0.55.001)
- *Births, Australia* (cat. no. 3301.0)
- *Life Tables* (cat. nos. 3302.0.55.001–3302.8.55.001)
- *Experimental Life Tables for Aboriginal and Torres Strait Islander Australians, 2005–2007* (cat. no. 3302.0.55.003)
- *Discussion Paper: Assessment of Methods for Developing Life Tables for Aboriginal and Torres Strait Islander Australians, 2006* (cat. no. 3302.0.55.002)
- *Causes of Death, Australia* (cat. no. 3303.0)
- *Causes of Death, Australia: Doctor Certified Deaths, Summary Tables* (cat. no. 3303.0.55.001)
- *Perinatal Deaths, Australia* (cat. no. 3304.0)
- *Information Paper: ABS Causes of Death Statistics: Concepts, Sources, and Methods* (cat. no. 3317.0.55.002)
- *Australian Social Trends* (cat. no. 4102.0)
- *ABS Directions in Aboriginal and Torres Strait Islander Statistics, Jun 2007* (cat. no. 4700.0)
- *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples* (cat. no. 4704.0)
- *Information Paper: Census Data Enhancement—Indigenous Mortality Quality Study, 2006–07* (cat. no. 4723.0)

55 ABS products and publications are available free of charge from the ABS website <<http://www.abs.gov.au>>. Click on Statistics to gain access to the full range of ABS statistical and reference information. For details on products scheduled for release in the coming week, click on the Future Releases link on the ABS homepage.

ADDITIONAL STATISTICS
AVAILABLE**56** More detailed deaths and mortality statistics can be obtained from data cubes available for download from the ABS website in *Deaths, Australia, 2008* (cat. no. 3302.0):

- Deaths, Summary, Australia, states and territories, 1998 to 2008
- Death rates, Summary, Australia, states and territories, 1998 to 2008
- Life expectancy, Selected ages, Australia, states and territories, 1998 to 2008
- Deaths, Summary, Statistical Divisions, 2003 to 2008
- Deaths, Summary, Statistical Local Areas, 2003 to 2008
- Deaths, Summary, Local Government Areas, 2003 to 2008
- Deaths, Age at death, Marital status, Australia, 2008
- Deaths, Country of birth, Australia, 2008
- Infant deaths, Age at death, Australia, states and territories, 1998 to 2008
- Deaths, Year of occurrence, Age at death, Australia, states and territories, 1998 to 2008
- Median age at death, Year of occurrence, Australia, states and territories, 1998 to 2008
- Deaths, Year and month of occurrence, Australia, states and territories, 1998 to 2008
- Infant deaths, Year of occurrence, Age at death, Australia, 1998 to 2008
- Infant deaths, Year and month of occurrence, Australia, states and territories, 2006 to 2008
- Deaths, Indigenous status, Australia, states and territories, 1991 to 2008

ADDITIONAL STATISTICS

AVAILABLE *continued*

- Median age at death, Indigenous status, Selected states and territories, 1991 to 2008
- Infant mortality rates, Indigenous status, Selected states and territories, 1991 to 2008

57 For additional articles on deaths (including causes of death) and mortality published by the ABS, see Appendix: Feature Articles List.

58 The ABS can also make available information which is not published. See Appendix: Characteristics Available for the characteristics processed by the ABS related to registered deaths. A charge is applied for providing this information.

59 As well as the statistics included in this and related publications, the ABS may have other relevant data available on request. Inquiries should be made to the National Information and Referral Service on 1300 135 070.

60 The ABS also issues a daily Release Advice on the website which details the products to be released in the week ahead.

INTRODUCTION

1 In 2008 there were 1,200 infant deaths (deaths of children less than one year of age) and 230 deaths of children aged 1–4 years, comprising 0.9% and 0.2% of all deaths in Australia respectively. Disaggregation of these data to more detailed levels—in particular, by Indigenous status and state/territory of usual residence—will necessarily lead to smaller numbers.

2 As a result of such numbers, derived mortality rates may have high levels of uncertainty associated with them. This Technical Note illustrates levels of uncertainty for infant and child (1–4 years) mortality rates for 2006–2008, by state/territory, sex and Indigenous status of the child, through the calculation of confidence intervals.

VARIABILITY IN DEATH RATES

3 Death rates in this publication are based on the mortality experience of an entire population, rather than from a sample. As there is no sampling error associated with this data, it might be considered that standard errors are not relevant to the question of variability in death rates.

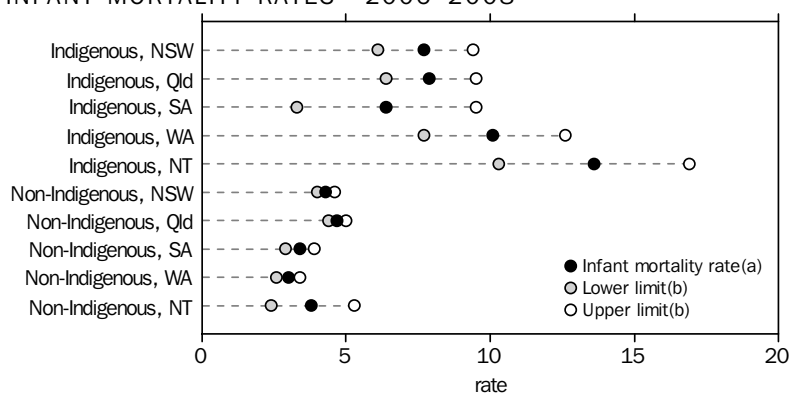
4 However, observed death rates are commonly treated as estimates of an underlying death rate that gives the probability of death for individuals in a population. This presupposes a statistical model in which each person is subject to some risk of dying over a given period, and whether each person in fact dies is a random event. Considered in this sense, the underlying death rates are unknown, and the observed death rates measure them with some sampling error.

5 The standard errors used to derive confidence intervals presented in this Technical Note are calculated to measure the extent of such random variations in numbers of deaths, using the methods described in Chiang (1984).

INFANT MORTALITY RATES

6 Infant mortality rates (IMRs) by Indigenous status and state/territory of usual residence for 2006–2008 are presented in the following graph (for males and females combined).

INFANT MORTALITY RATES—2006–2008



(a) Infant deaths per 1,000 live births.
(b) 95% confidence intervals.

INFANT MORTALITY RATES

continued

7 Confidence intervals associated with non-Indigenous IMRs are relatively small, apart from in the Northern Territory.

8 For Indigenous IMRs the range is larger, especially for the Northern Territory and South Australia, for which confidence intervals for males and females combined range from 10.3–16.9 infant deaths per 1,000 live births and 3.3–9.5 infant deaths per 1,000 live births respectively. Rates for males and females separately show wider ranges (see table below).

INFANT MORTALITY RATES, 2006–2008

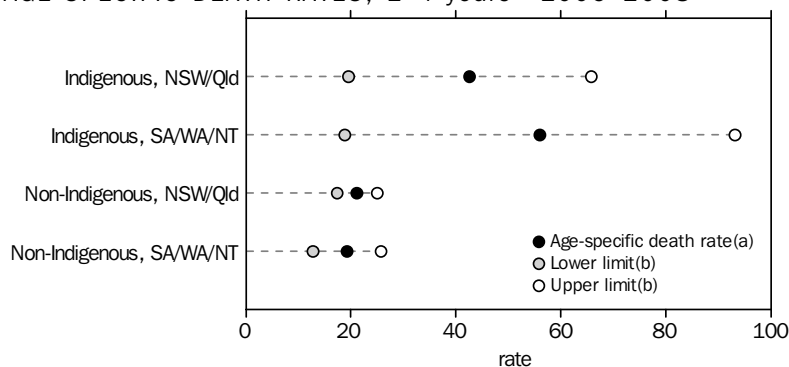
		95% CONFIDENCE INTERVALS		
	Infant deaths	Infant mortality rate(a)	Lower limit	Upper limit
INDIGENOUS				
Males				
NSW	48	8.3	6.0	10.6
Qld	53	8.4	6.2	10.7
SA	9	6.8	2.4	11.2
WA	37	11.5	7.8	15.2
NT	37	15.1	10.3	19.9
Females				
NSW	39	7.1	4.9	9.4
Qld	45	7.4	5.3	9.6
SA	7	5.9	1.5	10.2
WA	29	8.8	5.6	12.0
NT	27	11.9	7.4	16.4
Persons				
NSW	87	7.7	6.1	9.4
Qld	98	7.9	6.4	9.5
SA	16	6.4	3.3	9.5
WA	66	10.1	7.7	12.6
NT	64	13.6	10.3	16.9
NON-INDIGENOUS				
Males				
NSW	653	4.9	4.5	5.3
Qld	448	5.3	4.8	5.8
SA	97	3.5	2.8	4.2
WA	116	2.9	2.3	3.4
NT	15	4.4	2.2	6.6
Females				
NSW	465	3.7	3.3	4.0
Qld	322	4.1	3.6	4.5
SA	87	3.2	2.6	3.9
WA	121	3.2	2.6	3.7
NT	11	3.3	1.3	5.2
Persons				
NSW	1 118	4.3	4.0	4.6
Qld	770	4.7	4.4	5.0
SA	184	3.4	2.9	3.9
WA	237	3.0	2.6	3.4
NT	26	3.8	2.4	5.3

(a) Infant deaths per 1,000 live births.

AGE-SPECIFIC DEATH RATES,
CHILDREN AGED 1–4 YEARS

9 Age-specific death rates for children aged 1–4 years by Indigenous status for NSW/Qld combined and SA/WA/NT combined for 2006–2008 are presented in the following graph (for males and females combined).

AGE-SPECIFIC DEATH RATES, 1–4 years—2006–2008



(a) Deaths per 100,000 population.
(b) 95% confidence intervals.

10 Similar to non-Indigenous IMRs, confidence intervals associated with death rates for non-Indigenous children aged 1–4 years are relatively small.

11 However, confidence intervals for Indigenous children aged 1–4 years (males and females combined) show very large ranges for both NSW/Qld combined and SA/WA/NT combined, such that the lower limits are lower than the age-specific death rates for non-Indigenous children. Such wide ranges severely question the usefulness of these rates. Confidence intervals for males and females separately are wider still (table below).

AGE-SPECIFIC DEATH RATES, 1–4 YEARS, 2006–2008

	Deaths, children aged 1–4 years	Age-specific death rate (a)	95% CONFIDENCE INTERVALS	
			Lower limit	Upper limit
INDIGENOUS				
NSW/Qld				
Males	24	51.3	15.8	86.8
Females	15	33.6	4.2	62.9
Persons	39	42.6	19.5	65.8
SA/WA/NT				
Males	13	55.2	3.3	106.9
Females	13	56.9	3.4	110.4
Persons	26	56.0	18.8	93.2
NON-INDIGENOUS				
NSW/Qld				
Males	199	23.9	18.2	29.7
Females	145	18.4	13.2	23.6
Persons	344	21.2	17.4	25.1
SA/WA/NT				
Males	67	24.4	14.3	34.5
Females	36	13.9	6.0	21.7
Persons	103	19.3	12.8	25.7

(a) Deaths per 100,000 population.

CONCLUSION

12 The death rates presented above for Indigenous Australians have large associated confidence intervals and should be interpreted with a high degree of caution. Making comparisons over time (for example, year to year comparisons), between jurisdictions or between Indigenous and non-Indigenous Australians is therefore problematic due to the high level of uncertainty. In particular, confidence intervals for death rates of Indigenous children aged 1–4 years are very large as a result of the very small numbers of deaths in these ages.

13 While methods such as aggregating data over jurisdictions and/or longer time periods may help to reduce the width of the confidence intervals, this may limit the usefulness of the data for comparisons over time. In the case of Indigenous children aged 1–4 years, aggregation has not improved the confidence intervals to a level at which the rates could be interpreted with confidence.

14 The confidence intervals presented in this Technical Note relate to random variations in *numbers of deaths only*. No other sources of errors or deficiencies in either deaths or population data have been considered in these calculations. For example, variations in Indigenous death rates may arise from uncertainty in the recording of Indigenous status on the death registration form (in particular, under-identification of Indigenous deaths) and in the Census, from which population estimates are derived (for more information see Chapter 3: Deaths of Aboriginal and Torres Strait Islander Australians). Confidence intervals would differ to those presented here if all these sources of variations were considered.

GLOSSARY

Age-specific death rate	Age-specific death rates (ASDRs) are the number of deaths (occurred or registered) during the calendar year at a specified age per 1,000 of the estimated resident population of the same age at the mid-point of the year (30 June). Pro rata adjustment is made in respect of deaths for which the age of the deceased is not given.
Country of birth	The classification of countries used is the Standard Australian Classification of Countries (SACC). For more detailed information refer to the <i>Standard Australian Classification of Countries (SACC)</i> (cat. no. 1269.0).
Crude death rate	The crude death rate (CDR) is the number of deaths registered during the calendar year per 1,000 estimated resident population at 30 June. For years prior to 1992, the crude death rate was based on the mean estimated resident population for the calendar year.
Death	Death is the permanent disappearance of all evidence of life after birth has taken place. The definition excludes all deaths prior to live birth. For the purposes of the Deaths and Causes of Death collections of the Australian Bureau of Statistics (ABS), a death refers to any death which occurs in, or en route to Australia and is registered with a state or territory Registry of Births, Deaths and Marriages.
Estimated resident population	The official measure of the population of Australia is based on the concept of residence. It refers to all people, regardless of nationality or citizenship, who usually live in Australia, with the exception of foreign diplomatic personnel and their families. It includes residents who are overseas for less than 12 months. It excludes overseas visitors who are in Australia for less than 12 months.
External territories	Australian external territories include Australian Antarctic Territory, Coral Sea Islands Territory, Norfolk Island, Territory of Ashmore and Cartier Islands, and Territory of Heard and McDonald Islands.
Indigenous	Persons who identify themselves as being of Aboriginal and/or Torres Strait Islander origin.
Indigenous death	The death of a person who is identified as being of Aboriginal and/or Torres Strait Islander (Indigenous) origin on the Death Registration Form (DRF). From 2007, Indigenous origin for deaths registered in South Australia, Western Australia, Tasmania, the Northern Territory and the Australian Capital Territory is also derived from the Medical Certificate of Cause of Death (MCCD).
Indirect standardised death rate (ISDR)	See Standardised death rate (SDR).
Infant death	An infant death is the death of a live-born child who dies before reaching his/her first birthday.
Infant mortality rate	The number of deaths of children under one year of age in a calendar year per 1,000 live births in the same calendar year.
Intercensal discrepancy	Intercensal discrepancy is the difference between two estimates at 30 June of a census year population, the first based on the latest census and the second arrived at by updating the 30 June estimate of the previous census year with intercensal components of population change which take account of information available from the latest census. It is caused by errors in the start and/or finish population estimates and/or in estimates of births, deaths or migration in the intervening period which cannot be attributed to a particular source.

Life expectancy	Life expectancy refers to the average number of additional years a person of a given age and sex might expect to live if the age-specific death rates of the given period continued throughout his/her lifetime.
Life table	<p>A life table is a tabular, numerical representation of mortality and survivorship of a cohort of births at each age of life. The conventional life table is based on the assumption that as the cohort passes through life it experiences mortality at each age in accordance with a predetermined pattern of mortality rates which do not change from year to year. The life table thus constitutes a hypothetical model of mortality, and even though it is usually based upon death rates from a real population during a particular period of time, it does not describe the real mortality which characterises a cohort as it ages.</p> <p>Due to differences in mortality patterns between males and females at different ages, life tables are generally constructed separately for each sex.</p>
Live birth	A live birth is the birth of a child who, after delivery, breathes or shows any other evidence of life such as a heartbeat.
Local Government Area	Local Government Areas (LGAs) are the spatial units which represent the geographical areas of incorporated local government councils and incorporated Community Government Councils (CGCs) where the CGC is of sufficient size and statistical significance. The various types of LGAs are cities (C), areas (A), rural cities (RC), towns (T), shires (S), district councils (DC) and municipalities (M). Further information concerning LGAs is contained in <i>Australian Standard Geographic Classification</i> (cat. no. 1216.0).
Marital status	<p>Two separate concepts are measured by the ABS. These are registered marital status and social marital status.</p> <p>Registered marital status refers to formally registered marriages and divorces. Registered marital status is a person's relationship status in terms of whether he or she has, or has had, a registered marriage with another person. Accordingly, people are classified as either 'never married', 'married', 'widowed', or 'divorced'.</p> <p>Social marital status is the relationship status of an individual with reference to another people who is usually resident in the household. A marriage exists when two people live together as husband and wife, or partners, regardless of whether the marriage is formalised through registration. Individuals are, therefore, regarded as married if they are in a de facto marriage, or if they are living with the person to whom they are registered as married. Under social marital status, a person is classified as either 'married' or 'not married' with further disaggregation of 'married' to distinguish 'registered married' from 'de facto married' person.</p>
Median value	For any distribution the median value (age, duration, interval) is that value which divides the relevant population into two equal parts, half falling below the value, and half exceeding it. Where the value for a particular record has not been stated, that record is excluded from the calculation.
Mortality	Death.
Natural increase	Excess of births over deaths.
Other Territories	Following the 1992 amendments to the <i>Acts Interpretation Act</i> to include the Indian Ocean Territories of Christmas Island and the Cocos (Keeling) Islands as part of geographic Australia, another category at the state and territory level has been created, known as Other Territories. Other Territories include Jervis Bay Territory, previously included with the Australian Capital Territory, as well as Christmas Island and the Cocos (Keeling) Islands.
Sex ratio	The sex ratio relates to the number of males per 100 females. The sex ratio is defined for total population, at birth, at death and among age groups by appropriately selecting the numerator and denominator of the ratio.

Standardised death rate (SDR)	<p>Standardised death rates (SDRs) enable the comparison of death rates between populations with different age structures by relating them to a standard population. The ABS standard populations relate to the years ending in 1 (e.g. 2001). The current standard population is all persons in the Australian population at 30 June 2001. SDRs are expressed per 1,000 or 100,000 persons. There are two methods of calculating standardised death rates:</p> <ul style="list-style-type: none"> ■ The direct method—this is used when the populations under study are large and the age-specific death rates are reliable. It is the overall death rate that would have prevailed in the standard population if it had experienced at each age the death rates of the population under study. ■ The indirect method—this is used when the populations under study are small and the age-specific death rates are unreliable or not known. It is an adjustment to the crude death rate of the standard population to account for the variation between the actual number of deaths in the population under study and the number of deaths which would have occurred if the population under study had experienced the age-specific death rates of the standard population. <p>Wherever used, the definition adopted is indicated.</p>
Standardised mortality ratio	The ratio of the actual number of deaths in the population under study and the number of deaths which would have occurred if the population under study had experienced the age-specific death rates of the standard population (see also Standardised death rate, the indirect method).
State or territory of registration	State or territory of registration refers to the state or territory in which the event was registered.
State or territory and Statistical Local Area of usual residence	<p>State or territory and Statistical Local Area (SLA) of usual residence refers to the state or territory and SLA of usual residence of:</p> <ul style="list-style-type: none"> ■ the population (estimated resident population); ■ the mother (birth collection); ■ the deceased (death collection).
Statistical Division	Statistical Divisions (SDs) consist of one or more Statistical Subdivisions (SSD). The divisions are designed to be relatively homogeneous regions characterised by identifiable social and economic units within the region, under the unifying influence of one or more major towns or cities. Further information concerning SDs is contained in <i>Australian Standard Geographic Classification (ASGC)</i> (cat. no. 1216.0).
Statistical Local Area	Statistical Local Areas (SLAs) are, in most cases, identical with, or have been formed from a division of, whole Local Government Areas (LGAs). In other cases, they represent unincorporated areas. In aggregate, SLAs cover the whole of a state or territory without gaps or overlaps. In some cases, legal LGAs overlap statistical subdivision boundaries and therefore comprise two or three SLAs (Part A, Part B and, if necessary, Part C). Further information concerning SDs is contained in <i>Australian Standard Geographic Classification (ASGC)</i> (cat. no. 1216.0).
Usual residence	Usual residence within Australia refers to that address at which the person has lived or intends to live for a total of six months or more in a given reference year.
Year of occurrence	Data presented on year of occurrence basis relate to the date the death occurred.
Year of registration	Data presented on year of registration basis relate to the date the death was registered.

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